



# inpaws journal

Indiana Native Plant and Wildflower Society

Spring 2018

## Giant blue cohosh

## New wildflower documented in state

By Kimberly Miser

Full confession: On Good Friday, 2017, I didn't go to church — even though I had the day off from work to do just that. It was a textbook perfect spring day, and I impulsively changed the plan. I picked up my 78-year-old mom Susie Watson and celebrated the day with a hike in the

Steuben County. Once we entered the forest, the canyon came into view. A wooded trail descends the slope to a stream bisecting the canyon, then rises again on the opposite side. Once on top of the west-side plateau, the trail makes a loop. Here, a weirdly wonderful wildflower stopped us in our tracks.

I admit, I bumble my way through flower identifications. Even so, I stopped hiking with my *Newcomb's Wildflower Guide* a year ago. It became a problem. I would spend 30 minutes working on an identification, sometimes at the first flower I'd come to. That method usually reshaped my hike from a peaceful woodland walk to a standing-in-one-place exercise of futility.

I developed a new method. When facing an unfamiliar plant, I take pictures of all its parts. I make notes on characteristics, such as whether



Kimberly Miser

*Giant blue cohosh had been documented in northeastern states and southeastern Canada, but not in Indiana until two INPAWS members found a stand in Steuben County last spring.*

woods. Within a few hours, we would discover a wildflower previously undocumented in Indiana.

You may remember last year's spring. In northeast Indiana, nature turned up the wow factor and gave us a truly fantastic wildflower season.

We stopped at Acres Along the Wabash, an ACRES Land Trust nature preserve in Wells County. Easter-appropriate yellow and white trout lilies (*Erythronium americanum* and *E. albidum*) carpeted the banks; the preserve's famous shooting stars (*Dodecatheon meadia*), in peak bloom, charmed us.

For our second stop, we picked another ACRES property, Robb Hidden Canyon in

the stem is hairy or what's growing nearby. Then I move on. More hiking, less standing around. Later, armed with the internet and guidebooks, I work on an identification.

Susie and I puzzled over this plant for quite a while. The flowers looked like those of blue cohosh (*Caulophyllum thalictroides*) but were dusty pink-purple.

What really drew our attention were the stem and leaves. With a rubbery purple stem and strangely "wilted" leaves, we couldn't tell if the

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*New cohosh* – continued on page 3

# Indian pipe (*Monotropa uniflora*)

## Native plant profile

By Michael Homoya

Indian pipe, ghost flower, corpse plant – strange names for a strange plant. So strange, in fact, that one might wonder if it really is a plant. But a plant it is, although certainly not your everyday, garden variety.

Indian pipe looks more like fungus than wildflower. Standing approximately 5 inches tall, it typically consists of a cluster of single stems with leaves reduced to small scales. The entire plant is waxy and ghostly white, turning black with age or if picked.



Lynne Tweedie

"Indian pipe is one of the few plants in the world that totally lack chlorophyll."

Atop each stem is a single flower with four to six petals. During prime blooming the flowers bow down to the ground, as if hiding some inner dark secret. And indeed it is. Our featured plant's guise isn't the only thing that's odd.

Indian pipe is one of the few plants in the world that totally lack chlorophyll. Chlorophyll, the substance that gives plants their green color, is necessary for photosynthesis. Without it they can't produce sugar, the simple food of life. So how does Indian pipe get its food? By stealing.

Indian pipe is a mycoheterotroph, that is, a non-photosynthetic plant that derives all of its nutrition from a green plant via a subterranean fungal conduit connecting the roots of both. The flow is one way, however, as the Indian

pipe provides nothing in return. Fortunately for the fungus and the green plant, this parasitic act does little harm, as the amount of nutrients taken is minute. After all, if the host is killed, so goes the meal ticket.

As bizarre as Indian pipe might be, it's related to some familiar "normal" plants. Indian pipe, blueberry, cranberry and azalea are all members of the heath family (Ericaceae). Other recognizable family relatives include huckleberry, mountain laurel, sourwood, heather and wintergreen. (Note: some botanists place Indian pipe in a different family, the Monotropaceae).

Indian pipe's scientific name, *Monotropa uniflora*, refers to its one flower (*uniflora*) on a stem with a one-directional (*mono*) turn (*tropos*). The common names are the result of one's creativity and imagination. (Don't you see the feathers on the peace pipe?) By whatever name, the species occurs in most forested regions of North America, and as far south as northwestern South America. Amazingly, eastern Asia is also home. Moist forest is the favored habitat of Indian pipe, where it normally blooms in late summer.

Indian pipe occurs throughout much of Indiana, but is uncommon where found. Actually, perhaps it's not so uncommon, because Indian pipe can exist indefinitely underground and out of sight. Most likely, we're just unaware of the true number of plants underfoot.

Unless, that is, it appears that all are in bloom. Charles Deam, Indiana's premier pioneer botanist, reported such a rare event in his *Flora of Indiana*. He saw Indian pipe "so common that it reminded one of a woods in winter when the snow was on the ground. Acres of this woods were carpeted with it."

In subsequent years he could find only a few scattered plants at the site. But these fascinating plants are likely still there, quietly living out their lives underground.

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Reprinted with permission from Outdoor Indiana.

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Michael Homoya is a botanist with DNR's Division of Nature Preserves and current president of INPAWS. As a teen, one of the first wildflowers he found and identified on his own was Indian pipe.

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## New cohosh – from page 1

plant was at its end stage or a victim of a hard frost or chemical exposure. Groups of the plants covered the plateau — we considered whether it might be invasive.

Once home, I was unable to find the flower in any of my field guides. After a quick internet search, I made a preliminary identification of *Caulophyllum giganteum* – giant blue cohosh. But I had doubts — according to the U.S. Department of Agriculture, *C. giganteum* is not listed in Indiana.

The web site of the University of Michigan Herbarium, *michiganflora.net*, says the flowers of *C. giganteum* are usually purple/maroon or greenish purple, while those of *C. thalictroides* are yellow, green, or yellow lightly tinged with purple. *Flora of North America* says the blooms of *C. giganteum* are purple, red, brown or yellow and those of *C. thalictroides* are yellow, purple or green.

Clearly, flower color was not going to be the definitive factor in this identification.

I involved Kate Sanders, stewardship chair for INPAWS Northeast Chapter, who then shared my pictures with Nate Simons, executive director of Blue Heron Ministries, and Ben W. Hess, east central ecologist for DNR's Division of Nature Preserves. Both felt we should share the find with Michael Homoya, DNR's state botanist and plant ecologist.

To make an accurate identification, Homoya said we needed measurements of the petals, pistils and leaves. Kate and I returned to Robb the following week. One characteristic of *C. giganteum* is that it blooms before the leaves unfold. Now most of the flowers were gone and the plant's leaves had transformed from looking dead to flat, smooth and green. We found a few flowers and measured what we could.

The pistils and stamens of *C. giganteum* are longer than those of *C. thalictroides*, and *C. giganteum* also has more sepals and slightly larger leaflets. Using our measurements and pictures, Homoya confirmed the identification as best he could without seeing the plant firsthand. He said *C. giganteum*'s natural range is mostly the northeastern United States and southeastern Canada, but he often thought it should occur in Indiana.

"As far as I know, it has never been documented in the state until your discovery," Homoya told me.

Homoya thinks the plant has probably been there awhile, given its spread on the ridge, but previous visitors may not have known how to distinguish *C. giganteum* from *C. thalictroides*.

"Some botanists don't think the distinction is worthy of recognition as a species," Homoya said. But differences in leaves, reproductive strategies, and length of pistils, styles and stamens lead most botanists to the same conclusion as his: "From what I can see, the differences are sufficient to treat it as a separate species."

Homoya offers advice for both wildflower experts and novices: "Keep wandering! With over 2,000 native plants in the state, there's always some new, really cool plant to meet."

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*Editor's note: In her 2000 Field Guide to Indiana Wildflowers, Kay Yatskevych notes in her entry for Caulophyllum thalictroides: "A second species that was recently recognized, Caulophyllum giganteum (Farw.) Loconte & W.H. Blackw., with purplish sepals and styles > 1 mm might eventually be found in northeastern or southeastern Indiana."*

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*Kim Miser is communications chair of INPAWS Northeast Chapter.*

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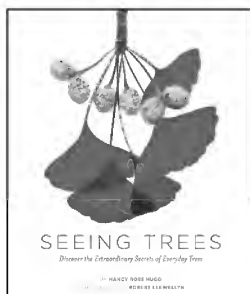
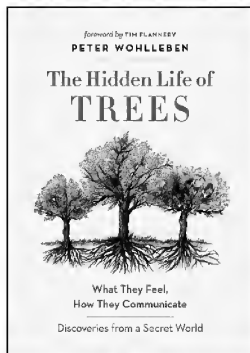
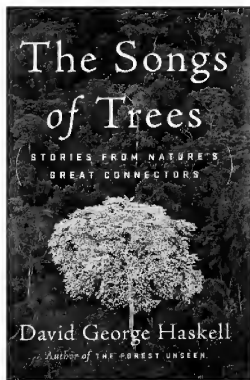
Kimberly Miser

*Compared with the more familiar blue cohosh, giant blue cohosh (above) has longer pistils and stamens as well as more sepals and slightly larger leaflets.*

## Trees:

# Beauty is more than bark-deep

### Book reviews



By Patricia Happel Cornwell

*The Songs of Trees: Stories from Nature's Great Connectors* by David George Haskell, Viking, New York, 2017

David Haskell is as good a writer as he is a scientist. He has the gift of being scientific without being didactic or intrusive, lyrical without ever becoming sappy. He has done his homework, too, as evidenced by the 22-page bibliography that follows the text.

This is a man who knows how to sit still in one place and listen to what nature has to teach him. His earlier book was *The Forest Unseen: A Year's Watch in Nature*, Viking, New York, 2012.

The forest, Haskell writes, "is the place where biological hubris dies: we live in profound ignorance of our cousins," the trees. And "because life is network, there is no 'nature' or 'environment' separate and apart from humans."

In *Songs* he spends time with individual trees in Ecuador, Japan, Jerusalem, Scotland, Ontario and the US, studying their complicated webs of relationship with other plants, fungi, insects, birds and mammals. The author distinguishes among the characteristics of different woodpecker drills on tree trunks, explains how the redwoods turned to stone, and how "plant cells not only sniff the air to detect the health of neighbors but also use airborne odors to attract helpful caterpillar-eating insects."

"The tree that we see above the ground," Haskell explains, "is the sun-gathering appendage of a community of roots and fungi, a chimeric water-seeking subterranean giant." Botany class was never this fascinating.

*The Hidden Life of Trees: What They Feel, How They Communicate* by Peter Wohlleben, Greystone Books, Vancouver, 2015

In the acknowledgements at the end of this book, Peter Wohlleben makes a simple, profound statement: "Only people who understand trees are capable of protecting them." He, too, is a scientist with a flair for words.

Wohlleben, a German forester, uses no Latin names or scientific jargon, but provides

resource notes at the end of the book. He makes a case for the learning ability of trees ("Can plants think? Are they intelligent?"), explains how trees share nutrients with weaker neighbors, and manages to explain carbon 14 dating in plain terms.

In some instances, one is reminded that he is writing from a European perspective, as when he writes that beeches and oaks drop their leaves early in fall – that is, in Germany. In North America these species retain their leaves throughout the winter, having evolved to cope with different climatic conditions.

There is a certain amount of anthropomorphism in Wohlleben's book, but there is so much good information that it is a valuable and enjoyable read.

*Seeing Trees* by Nancy Ross Hugo, photography by Robert Llewellyn, Timber Press, Portland, 2011

*Seeing Trees* is a good-looking, slightly oversized book you'll be tempted to leave lying open on the coffee table. (The page-and-a-half photo of a pair of tulip poplar blossoms is spectacular.) Hugo's appreciative text and Llewellyn's artistry present close-ups of ten familiar trees in an unfamiliar format, more like "senior pictures" than snapshots.

Magnified photos of the flowers, seeds and leaves of these trees make them seem exotic, but they are old friends: beech, sycamore, walnut, cedar, ginkgo, red maple, magnolia, tulip poplar, white oak and white pine. Other species such as redbud, persimmon or birch are showcased in sections on fruits and bark.

Hugo writes, "Travelers marvel at European cathedrals that took hundreds of years to complete and that have survived the vicissitudes of history, but in many of our own neighborhoods are living trees that have survived as long with little or no recognition."

She urges readers to look at a tree from every angle, even from a hammock among its branches, and to look at that same tree in every season as it goes through its life cycles, rather than merely identifying a silhouette in a guide book and thinking we know what a tree is.



# What is a tree made of?

By Adrienne Funderburg Newsome

If you step outside or look out a window, chances are you can spot at least one tree. This of course depends on where you live, but even if you can't see one from your doorway, it wouldn't be a long trip to get to one. The truth is, we live among botanical giants. As common as they are, trees are grand wonders of the Kingdom *Plantae*, and in this column, we'll give them a bit of well-deserved attention.

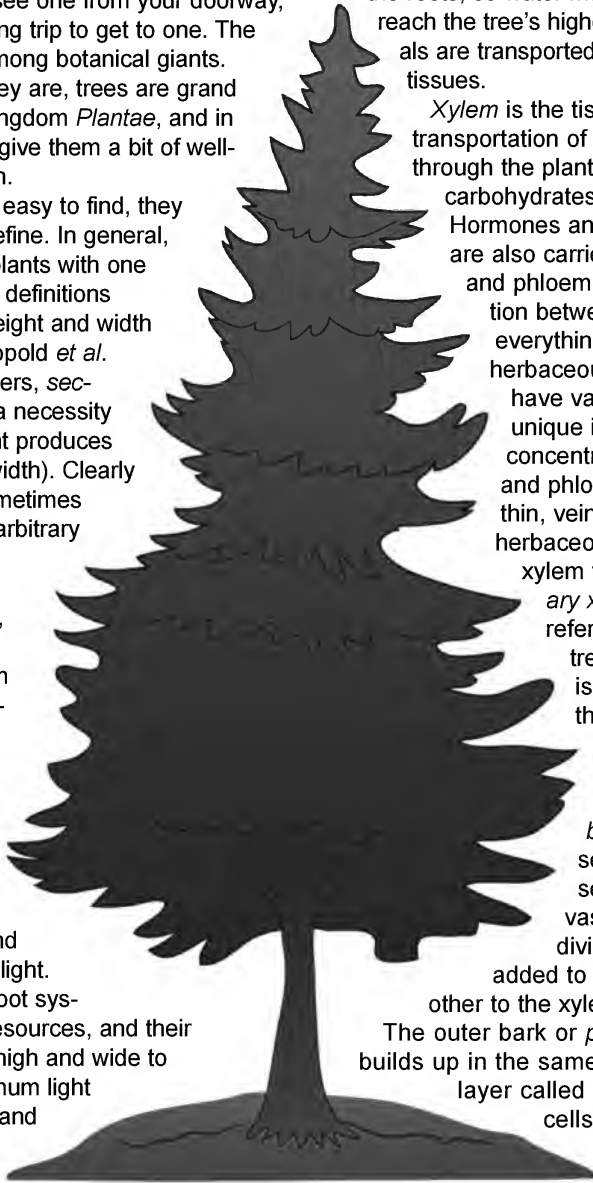
While trees are easy to find, they can be tricky to define. In general, trees are woody plants with one main trunk. Some definitions include specific height and width requirements (Leopold *et al.* 1998), and for others, *secondary growth* is a necessity (meaning the plant produces wood and gains width). Clearly defining terms sometimes requires drawing arbitrary lines, but it's an important part of any scientific field, including botany. For example, palm trees lack secondary growth, so in some cases they are considered herbs instead of trees (Edelman 2016).

Plants require water, minerals and nutrients, and sunlight. Trees grow vast root systems to take up resources, and their branches stretch high and wide to give leaves maximum light exposure. Height and wide branching offer distinct advantages in the collection of resources, but present a huge challenge in the transportation of those

resources within the plant. Carbohydrates produced by photosynthesis in the leaves must be transported down through the trunk to the roots. Conversely, leaves need the water gathered by the roots, so water must travel against gravity to reach the tree's highest points. These materials are transported by systems of vascular tissues.

*Xylem* is the tissue responsible for transportation of water and minerals up through the plant, and *phloem* transports carbohydrates downward (Berg 2008). Hormones and signaling molecules are also carried through the xylem and phloem, allowing communication between roots, leaves and everything in between. While all herbaceous and woody plants have vascular tissues, trees are unique in that they develop thick, concentric circle layers of xylem and phloem as opposed to the thin, vein-like bundles found in herbaceous plants. The built-up xylem tissue is called *secondary xylem*, also botanically referred to as the *wood* of the tree. *Secondary phloem* is a thinner layer than the secondary xylem and is the inner bark of a tree. A thin ring of cells, called the *vascular cambium*, lies between the secondary xylem and the secondary phloem. When vascular cambium cells divide, one daughter cell is added to the phloem side, and the other to the xylem, widening each layer. The outer bark or *periderm* of the tree builds up in the same way, produced by a cell layer called the *cork cambium*. The cells produced are called *cork cells* and are found just beneath the *epidermis*, the outermost layer of bark. Cork cells are impermeable to water and gas (Evert and Eichhorn 2013).

**Botany  
basics**



*Botany basics* – continued on page 7

# IU Herbarium needs your help

**By Eric B. Knox and  
Paul E. Rothrock**

After four years of work by a small army of undergraduate students, the Indiana University Herbarium is entering the final phase of its 5-year digitization project, and we need your help!

Charles C. Deam, Indiana's foremost botanist, published the *Flora of Indiana* in 1940.



*Building on the life's work of Charles Deam, the CMH web site provides a 21<sup>st</sup> century data portal to thousands of species.*

county, there were more than a few plants that escaped his careful eye.

The detailed distribution information in *Flora of Indiana* inspired citizen scientists throughout Indiana to help "fill in the missing information" and annual county record updates were published in the *Proceedings of the Indiana Academy of Science*. The Indiana University Herbarium has photographed its Indiana specimens, transcribed their label information into a structured database, and is currently determining the latitude and longitude of each collecting locality so the information can be retrieved in map-based searches.

This specimen information is available through the Consortium of Midwest Herbaria (CMH) data portal (<http://midwestherbaria.org>), along with information from other participating herbaria. The species information includes descriptions from Gleason & Cronquist's (1991) *Manual of Vascular Plants* and Deam's *Flora of Indiana* observations. On the Home page, you can search for information using scientific names. The Specimen Search tab enables you to Search Collections using key words, or to conduct a Map Search for an area of your choosing (for specimens with latitude/longitude

information). The Inventories tab takes you to an up-to-date checklist for Indiana (where you can also search on Common Names), but the golden key symbol takes you to an Interactive Key that will identify plants using easily observed features and simple terminology. A green information symbol takes you to a Wikipedia page on that topic. Clicking on any species name takes you to the species page.

## How you can help:

1) Do you have high quality digital images of plants *live and in the field* that can be posted on the CMH species pages (with photographer credit and, if desired, copyright)? If so, please contact Paul Rothrock ([perothro@indiana.edu](mailto:perothro@indiana.edu)) for instructions on how to submit your photos.

2) Not all species grow in all counties and 2018 will be the last growing season during the IU Herbarium Digitization Project. Can you photograph species in your area this spring/summer/fall? If so, please contact Paul for a personalized *desiderata* list.

3) Will you help test the Interactive Key for Indiana? We are still compiling information in the species level database that powers the Interactive Key, but we need beta-testers to spot places that need improvement. Again, contact Paul.

4) Although the Indiana University Herbarium will soon finish digitizing the largest and historically most important collection of Indiana plants, there are many Indiana specimens at other herbaria. Will you help with their label transcription and geo-referencing?

The CMH data portal provides a 21<sup>st</sup> century version of the *Flora of Indiana*, and we hope that you might help "fill in the missing information."

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*Eric Knox and Paul Rothrock are Curator and Associate Curator of the Indiana University Herbarium.*

## Botany basics – from page 5

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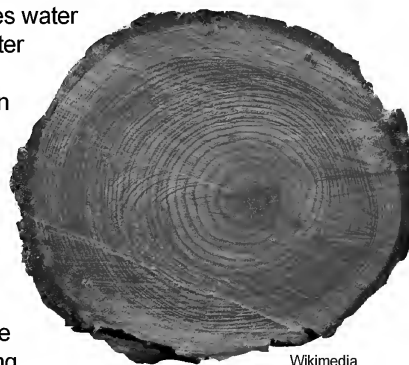
Tree cork is used to make a number of common products, including bottle stoppers and flooring (Berg 2008).

These three tissues, secondary xylem, secondary phloem, and periderm, are the source of the expansion of girth characteristic of trees. Secondary growth occurs in both the trunk and branches.

Whether or not the wood of a tree is living or non-living depends on the definition of terms. Functional xylem cells are dead – basically just hollow tubes for conducting water and nutrients from the soil up to stems and leaves. However, because they transport resources throughout the living organism, some botanists consider wood to be alive until it is cut from the tree. The outer bark is made of dead cells that do not act in any form of transport; therefore, it is considered non-living (Evert and Eichhorn 2013).

So the vascular tissues are responsible for resource movement, but how in the world does water travel tens or hundreds of feet against gravity to reach a tree's top? The main theory for water movement in plants is called the *cohesion-tension theory*. This theory states that water is transported via a pulling force, or tension, from the top of the tree. *Transpiration*, evaporation of water from leaves, causes a potential gradient in leaf cells (Berg 2008). In other words, surface cells draw water from cells adjacent to them, which draw water from the cells adjacent to them, and the pattern continues down the xylem. Water is a polar molecule, and as such experiences *cohesion*, attraction to other water molecules, and *adhesion*, attraction to other molecules (Evert and Eichhorn 2013). These phenomena allow water to climb and be pulled up the xylem, even as gravity pushes down on the tree.

There is much more to learn about these botanical giants. If you have questions of your own, visit a library, greenhouse, botanist or forester! But whatever you do, make sure to take note of the sheer size and number of trees around you and enjoy them thoroughly this spring.



Wikimedia

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Adrienne Funderburg Newsome is a senior at Huntington University where she studies biology and environmental science. American sycamore (*Platanus occidentalis*) is one of her favorite Indiana trees.

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### Need a grant?

A reminder: this year, October 1 is the deadline for INPAWS grant applications, with notification of awards the first week of November. Funds will be provided as reimbursement after a project is completed. Applications must fit one of three categories: research, land management and restoration, or demonstration garden.

Letha's Youth Outdoor Fund still accepts applications any time of year, restricted to educational field trips, transportation for students, naturalist fees and supplies. These awards are also disbursed as reimbursements of actual costs. For more details, see the winter 2017-18 issue of *INPAWS Journal* or [www.inpaws.org](http://www.inpaws.org).



### April 28-29

#### Newfields (IMA) plant sale

Newfields, the 152-acre campus that includes Indianapolis Museum of Art, will hold its annual "Perennial Premier" April 28-29. On Saturday, the plant sale will be open to members only from 9 a.m. to 12 p.m. and to the public from 12 to 4 p.m. On Sunday, the sale will be open to all from 12 to 3 p.m. Gardeners can shop for the best plants for their landscapes and receive plant advice from the Newfields horticultural experts. Species available will include native plants for sun and shade, shrubs and trees. Visit [discovernewfields.org](http://discovernewfields.org).





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To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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### Submissions

All are invited to submit photos, articles, news and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view. Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org. Submission deadlines for specific issues are: Spring – Jan. 22 for April 1 mailing; Summer – April 22 for July 1 mailing; Fall – July 22 for Oct. 1 mailing; Winter – Oct. 22 for Jan. 1 mailing

### Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public at inpaws.org.

### Share

Please direct information of interest to webmaster@inpaws.org.



# INPAWS 2017 Financial Summary

## By Don Gorney

The financial statements and this commentary reflect only state-level operations. They do not include any chapter financial data.

The financial position of INPAWS remains strong. During 2017, revenues exceeded expenses by \$14,124, compared to an operating deficit of \$6,135 in 2016. Revenues were bolstered near year's end 2017 by a \$10,000 donation to Letha's Outdoor Fund by an anonymous donor.

At the end of 2017 the organization had liquid cash assets of \$77,319 and no liabilities. Net assets (the equivalent of capital or net worth in for-profit accounting) include temporarily restricted assets of \$11,068 for Letha's Fund. ("Temporarily restricted assets" is a term used in nonprofit accounting to indicate funds that are restricted to a specific purpose.) Donations to Letha's Fund must be used only for grants to Indiana schools to pay for nature-oriented field trip expenses.

*Don Gorney is treasurer of INPAWS.*

## Profit & Loss Statement

### Fiscal Year 2017

#### INCOME

|                           |                    |
|---------------------------|--------------------|
| Membership                |                    |
| Gross membership dues     | 26,815.00          |
| Dues transfer to chapters | -3,990.00          |
| <b>Membership total</b>   | <b>22,825.00</b>   |
| Donations                 |                    |
| Donations – restricted    | 500.00             |
| Donations – other         | 1,213.82           |
| <b>Donations total</b>    | <b>1,713.82</b>    |
| Plant sale income         | 11,015.20          |
| Conference income         | 32,577.81          |
| Interest income           | 25.11              |
| Miscellaneous income      | 186.72             |
| Letha's Fund donations    | 13,565.00          |
| <b>Total income</b>       | <b>\$81,908.66</b> |

#### EXPENSES

|              |          |
|--------------|----------|
| Bank fees    | 12.00    |
| Legal fees   | 500.00   |
| Publications | 1,589.29 |
| Outreach     | 889.00   |

|                               |                 |
|-------------------------------|-----------------|
| Insurance, liability          | 2,791.00        |
| Network for Good              |                 |
| Processing fees               | 519.10          |
| Monthly fees                  | 1,088.95        |
| <b>Network for Good total</b> | <b>1,608.05</b> |

|                         |                 |
|-------------------------|-----------------|
| Membership              |                 |
| Printing/mailling       | 1,445.13        |
| Membership coordinator  | 150.00          |
| <b>Membership total</b> | <b>1,595.13</b> |

|                      |                  |
|----------------------|------------------|
| Journal              |                  |
| Printing             | 5,114.17         |
| Mailing              | 1,446.66         |
| Prep/editing         | 5,000.00         |
| <b>Journal total</b> | <b>11,560.83</b> |

|                    |          |
|--------------------|----------|
| Postage, other     | 394.20   |
| Web site           | 235.27   |
| Technology expense | 174.00   |
| External grants    | 5,000.00 |

|                         |                 |
|-------------------------|-----------------|
| Plant sale              |                 |
| Plants                  | 1,591.44        |
| Credit card processing  | 193.35          |
| Other                   | 874.39          |
| Bookstore               | 895.66          |
| <b>Plant sale total</b> | <b>3,554.84</b> |

|                         |                  |
|-------------------------|------------------|
| Annual conference       |                  |
| Venue & food            | 19,987.03        |
| Credit card processing  | 1,399.78         |
| Other                   | 6,184.15         |
| Bookstore               | 2,617.70         |
| <b>Conference total</b> | <b>30,188.66</b> |

|                               |               |
|-------------------------------|---------------|
| Grow IN Natives project       | 49.70         |
| Letha's Fund distributions    | 7,243.59      |
| Meeting expense               | 129.52        |
| <b>Miscellaneous expenses</b> | <b>268.75</b> |

|                       |                    |
|-----------------------|--------------------|
| <b>Total expenses</b> | <b>\$67,783.83</b> |
| <b>NET INCOME</b>     | <b>\$14,124.83</b> |

## Balance Sheet – December 31, 2017

#### ASSETS

|                     |                    |
|---------------------|--------------------|
| Checking            | 13,566.59          |
| Money Market        | 63,743.68          |
| <b>Total Assets</b> | <b>\$77,310.27</b> |

#### Net Assets

|                         |                    |
|-------------------------|--------------------|
| Unrestricted            | 66,242.04          |
| Letha's Fund            | 11,068.23          |
| <b>Total Net Assets</b> | <b>\$77,310.27</b> |

|                          |             |
|--------------------------|-------------|
| <b>TOTAL LIABILITIES</b> | <b>0.00</b> |
|--------------------------|-------------|

# Chapters dig into the

## INPAWS In Action

### West Central

In 2017, West Central Chapter's RIP (Remove Invasive Plants) Squad contributed more than 550 volunteer hours removing invasive plants. The effort is co-sponsored by Sycamore Audubon Society and West Lafayette and Tippecanoe County parks and recreation departments.

The squad averaged three to six volunteers per session, but at one of our "Pulling for

Bats" events at Ross Hills Park, we were joined by 20 students from Purdue University's Alpha Phi Omega – a lot was accomplished that day! These students also came to several of our spring and fall sessions. In April, Purdue's Circle K service organization joined us at Happy Hollow one afternoon, and a Purdue Women's Club group, "Into Nature," pulled a good morning's worth of garlic mustard at Celery Bog. Altogether we were pleased to have 32

Purdue folks joining our 14 community volunteers. Several chapter members contributed even more time on their own, knowing even a half-hour helps.

We pulled garlic mustard and small honeysuckle sprouts for more than 140 hours in West Lafayette, over 20 spring afternoons and some mornings in Celery Bog Nature Area, Michaud-Sinninger Nature Area (Cumberland Woods) and Happy Hollow Park.

Nick Harby focused on winter creeper in the Michaud-Sinninger Nature Area throughout the year. He discovered the invasive lesser celandine/fig buttercup during an April wildflower walk in Happy Hollow Park, and reported it via EDDMapS ReportIN, [www.eddmaps.org/indiana/distribution/point.cfm?id=4885459](http://www.eddmaps.org/indiana/distribution/point.cfm?id=4885459). West Lafayette Parks staff member Bob Cheever has worked to eradicate it.

We traveled in Tippecanoe County to nearby Ross Hills Park and Prophet's Rock Woods, volunteering more than 410 hours. We spent five winter afternoons on autumn olive and bush honeysuckle in Ross Hills and four summer mornings on Japanese stiltgrass there. Our early intervention on stiltgrass at Ross Hills looks successful so far. We enjoyed more than 20 spring afternoons, seeing wildflowers while pulling garlic mustard in both locations, and over 20 autumn afternoons going after bush honeysuckle, winged burning bush and autumn olive.

### Central

Central Chapter enjoyed wonderful speakers over the winter and kicked off 2018 with enthusiasm. In November, Dr. Rebecca Dolan gave a presentation on the Indiana Plant Atlas and the Friesner Herbarium at Butler University. Thanks to Ruth Ann Ingraham for hosting the January "ice breaker" – 25 years after she held a gathering in her living room that started INPAWS! Tom Hohman presented a "Why Native Plants?" program at Plainfield Library in February, and in March the chapter hosted a guest speaker, Eyup Erdogan, who discussed "Vascular Plants of Turkey" at St Peter's Church in Carmel. Hikes for the spring and summer are in the works.

### North

North Chapter held a native plant sale at the South Bend/Elkhart Audubon Society Sanctuary in Mishawaka in September. Members who had ordered ahead came out to pick up their orders and peruse other plants that were for sale. Audubon members, neighbors and friends also came out to see and purchase plants. Plant experts were available to help in making selections. Sales netted \$342 for the chapter's



*Jeri Pierce pulled garlic mustard on a trail walk at Celery Bog Nature Area in West Lafayette, April 17, 2017.*

Carole Ross

# New Year

## May 12 INPAWS plant sale

activities. The day was a partnership that included guided hikes and removing invasive plants from the sanctuary.

In October members gathered at a member's home for our annual potluck and election. Members enjoyed food, drink and native plant slides that several shared. Election results were Jan Hunter as new chapter president and Adam Balzer as new secretary. Cookie Ferguson and Scott Namestnik continue as vice president

*"The schedule for 2018 includes various natural areas in our region and knowledgeable botanists, ecologists and professors as guides. We are looking forward to a great year of native plants."*

and treasurer, respectively. In January, Morgan Daniel was appointed new stewardship chair.

At November and January board meetings, new ideas were discussed, including name tags and sign-in records for monthly meetings, "Help a Member" which offers invasive removal or native plant installations for current members, awards for exemplary private and public native gardens and recognition of dedicated volunteers.

Our January membership meeting was held at the WNIT Studios in South Bend. Hal Mann from Perrysburg, OH, spoke about his journey from humble gardener to native plant advocate. Working one section of his yard at a time to convince his wife and neighbors that native plant gardens don't have to look "weedy," he succeeded. He now enthusiastically shares his expertise with others.

Ellen Jacquart, well-known throughout the state as an expert in land management and stewardship, presented a program on invasive plants at our February meeting at Indiana Dunes National Lakeshore Visitor Center in Chesterton.

The North Chapter hike schedule for 2018 includes various natural areas in our region and knowledgeable botanists, ecologists and professors as guides. We are looking forward to a great year of native plants. 🌿

This year's INPAWS Native Plant Sale and Auction will be Saturday, May 12, again at Park Tudor High School, 7200 N. College Ave., Indianapolis, 46240. The event will start with a 9:30 a.m. presentation by The Nature Conservancy's (TNC) Dawn Slack on the environmental impact of invasive plants in our yards and communities.

Back by popular demand, Dawn will discuss the importance of protecting natives by eliminating invasive plants that threaten their existence in the wild.

She is a land steward for TNC of Indiana and chair of the Invasive Species Advisory Committee for the Indiana Invasive Species Council.

The \$10 fee for the presentation is also a \$10 coupon toward any auction purchase. Presentation attendees also get to enter the sale at 10 a.m., 15 minutes before the general public. Plant sale and book sale open 10:15 a.m. to 12:30 p.m.

The auction of the finest and rarest plants begins at 11:15 a.m. Each plant is described by experts for foliage, growing conditions and unique qualities.

If you have natives to share, please begin potting them a few weeks before the sale and label them if possible. If you need help digging, email Plant Rescue team leaders Dee Ann Peine and Judith Lieberman at [plantrescue@inpaws.org](mailto:plantrescue@inpaws.org). Plants can be dropped off at the school from 5 to 7 the night before or 7 to 9 the morning of the sale.

To volunteer to help with the sale, register at <http://signup.com/go/tRRuhEJ>. 🌿

### Correction

The meadow photo on page 7 of our winter 2017-18 issue was incorrectly attributed. It was taken by Ruth Ann Ingraham. 🌿



Patricia Happel Cornwell

*Volunteers help buyers prepare for checkout at the 2017 INPAWS plant sale.*

# Maurice McClue's gifts

## Naturalist profile



Naturalist John McClue (right) donated land that later became part of Pokagon State Park in Steuben County (above) in northeast Indiana.

### By Terri Gorney

In 1836, John McClue bought a parcel of land in Steuben County. Some of it is now part of Pokagon State Park, which his grandson Maurice McClue worked to make a reality in the 1920s. An attorney by profession, Maurice was a self-taught naturalist.

I first heard the name McClue while volunteering at Pokagon Nature Center. In 2007, now retired park interpreter Fred Wooley became caretaker of Maurice's "Natural History Memoranda," a 38-year nature journal (1919-1957). I was surprised it had never been transcribed so I offered to do it for the Charles McClue Reserve board. It became a multi-year project.

Maurice was born on the family farm in Pleasant Township in 1878. He donated 80 acres of this farm to the "Citizens of Steuben County" in the 1950s, before there were land trusts. He credited his father as an early conservationist and specified it be named in his honor. Thirty acres of what was to become a State-dedicated preserve is old growth forest.

Maurice was fascinated by wildflowers, trees, birds and mammals and spoke on nature topics to school groups, clubs and Boy Scout troops.

"Wildflowers and bluebirds are the first harbingers of spring time, of balmy airs and

sunny days, celestial messengers bringing good tidings," he wrote in a 1930 article for the *Steuben Republican*.

His wife Nora was a member of the Angola Garden Club, whose motto was "Make Glad

the Waste Spaces." She hosted some meetings at their home, and Maurice was a speaker at least twice. Echoing the group's motto in his "Memoranda," he described New England asters' "purple tinge" being in "every waste place."

When the couple moved to their home, McClue loved the overgrown lots on either side because they were full of nature. He wrote: "It would be unnecessary to import a single foreign flower to create a flower garden in America of the most exquisite colors, and a garden to run through the entire season. ... It seems strange to me that people will drive a hundred miles to see tulip gardens or rare peonies, and yet neglect the beauty that a bountiful nature has planted at their very doors ... free

of cost, a garden that lasts from the first anemone in the spring to the last autumn foliage."

McClue was disturbed by the loss of native wildflowers. "Yesterday (July 27, 1941) in the edge of a marsh bordering Lake George," he recorded, "I saw a flower that is rare here, the hard hack or steeple bush. I never saw it in Steuben County but once before,



McClue Family

# to Steuben County

several years ago near Lake James, but the second year it was not there. It is difficult to preserve any attractive flower if it is where a person can reach it. Fringed gentians have disappeared from several places where they formerly grew, simply because people repeatedly picked them." He was not happy when he sold his lake cottage and the new owner pulled out the gentian on the property.

In 1941, he wrote of a severe drought that "diminished the numbers of wild flowers ... Goldenrod is one plant that seems to stand drought better than most and it is fairly plentiful but there are scarcely any wild asters."

In September, 1946, McClue made an innocent, yet fateful mistake. Visiting Jonesville, MI, he "saw a lot of loosestrife, a flower that is yet very rare here. Along the bank of the St. Joseph River there were acres of these beautiful flowers ... I can hardly imagine a better addition to the ranks of our wildflowers, even though a foreigner." Unfortunately, he brought some back and planted it.

"In northern Indiana," McClue wrote, "April is the month of Nature's beginning, and August sees the inception of its ending ... the bergamots still linger, a few St. John's worts and evening primroses still remain here and there, and if one wanders about enough he may find the beautiful fox glove in blossom. In the marshes the royal purple of ironweed is in bloom, and we know the goldenrod and wild asters are yet to come, but the halcyon days of the most gorgeous bloom is gone for the year."

After Fort Wayne wildflower enthusiast Doug Rood read McClue's journal, he wrote, "McClue reminded his readers that rarities such as fringed gentian, Indian paintbrush and purple lady's slipper (fringed orchis) would soon be lost ... if not protected. He was right. Today fringed gentians are still around but the other two are scarce as hen's teeth."

Even in his 70s, McClue was still in awe of the natural world. "A short visit to the country today. What a joy it would be if I could spend part of each day out in the open to observe nature, with every day almost certain to bring ... some new wildflower." In the spring of 1955, he was anticipating the appearance of fawn lilies and trilliums in his woods.

McClue's last journal entry May 11, 1957, is haunting. Five years before Rachel Carson's *Silent Spring*, he wrote about DDT. "On the

| 16                         |  | POLICY REGISTER |          | AGENCY AT:     |               |                |                |                    |               |
|----------------------------|--|-----------------|----------|----------------|---------------|----------------|----------------|--------------------|---------------|
| POLICY OR REVENUE NUMBER   | NAME OF ASSURED  | ADDRESS         | BUSINESS | FORM OF POLICY | AGE AND CLASS | DATE OF POLICY | TERM OF POLICY | DATE OF EXPIRATION | POLICY LIMITS |
| June 20 <sup>th</sup> 1932 | Just behind my cottage at Lake James there is standing a large, thick poplar tree, a tree about thirty inches through. This tree has very heavy bark and deep crevices between the ridges of bark. Last evening about sundown I noticed a large number of humble bees around this tree. At first I had the idea they were what we call carpenter bees, but on catching one I found it to be a large humble bee. I watched these bees for a long time to ascertain their purpose in coming to this particular tree. There were some blossoms on the tree but the bees, when I saw them, apparently were paying no attention to the flowers, but were hovering about the bark. The sky was nearly overcast and it was threatening rain. Finally I noticed that some of the bees were alighting on the bark and crawling into crevices in the bark. As I saw them crawl into and out of half a dozen places before finding one to suit them, but after a while as suitable location would be found and the bee would stop. Sometimes a second bee would invade the place taken by another but one or the other of the two always left. Another time of the same kind about three or four were seen but no bee seemed to get up as I thought the next morning and found the bees still there. It was very hard to distinguish the bees from the bark of the tree, but I found several. I judged the evening before the bees were fifty feet elevated on the bark of this tree. |                 |          |                |               |                |                |                    |               |
| June 22 <sup>nd</sup> 1932 | A man from the country told me yesterday that during the evening several couples of Blue Jays were making a great ado in some cedar trees near his house, and one of the boys went to investigate the cause he found a large black snake coiled about the Blue Jay's nest. Upon getting a gun and shooting the snake it was found that the snake had devoured the four young birds. These snakes were very common years ago when I was a boy but in more recent years have been rare. I had not seen one for perhaps thirty or thirty five years until last summer. I recalled their absence to the removal of the timber in which they were usually found.  |                 |          |                |               |                |                |                    |               |
| June 24 <sup>th</sup> 1932 | I saw a scarlet tanager in the woods today when I saw one last year and the year before at about the same time. This led me to think that this bird nest at this particular place. Perhaps, I could determine if I had time to go there and make and make the bird for an hour or two.   |                 |          |                |               |                |                |                    |               |
| July 24 <sup>th</sup> 1932 | It is strange what a difference a week sometimes makes in the songs of birds. A week ago today at the lake cottage the birds were all singing. I heard cardinals as well thrush, at out thro, wrens, as song sparrows, warblers, vireos and robins, but today with the exception of a few notes from the vireo in the afternoon all the birds were silent. Not a sound from west of them from morning until night. Later on the robins will sing for a few days and also the vireos, but for most of the feathered songsters their vocal season is over here until another year.   |                 |          |                |               |                |                |                    |               |

6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup> of this month the weather was clear and fine and orioles were singing in the maple trees near my home. They are beautiful singers ... but I am afraid that as soon as the town is sprayed ... to kill the insects, the orioles will all leave as they have done before." Ten days later, he died peacefully in his sleep.

All McClue quotes are from his "Natural History Memoranda."

Terri Gorney is vice-president of Friends of the Limberlost. She volunteers for DNR at Limberlost State Historic Site in Geneva.

A copy of a page from McClue's Natural History Memoranda, which are now archived at the Fremont County Public Library

# 25 years of INPAWS: the seed

**By Ruth Ann Ingraham**

Twenty-five years ago, Dr. Rebecca Dolan, director of the Friesner Herbarium at Butler University,

was among a small gathering of people who came together to discuss starting an organization devoted to native plants. She recalls, "I was thrilled to think there were others in the community who share my love of and interest in native plants. I imagined a loosely organized group

However, snow could not hinder the momentum begun by several people both inside and outside Indiana - specifically gardener, author and speaker Carolyn Harstad, Missouri Botanical Garden botanist Kay Yatskievych, Purdue University professor of horticulture Mike Dana, birder and naturalist Brink and Terre Haute's Amy Little Mason. Each maintained lists of people interested in joining a native plant society - should one be formed. Seeds were ready to plant, even in the cold heart of winter.

But let's turn back the clock for a moment. The trigger for action occurred when Kay spoke in 1992 to members of the Horticultural Society at the Indianapolis Museum of Art (now Newfields) about her forthcoming guide to wildflowers of Indiana. During her presentation she lamented that *Indiana was the only state east of the Mississippi River without a native plant soci-*

*ety.* Those words called me to action. Although I could not define "native plant," Hoosier pride, not knowledge, spurred me to become the convener.

Fast forward to March 1, 1993. Drives and streets plowed, I met with Carolyn, one of those stymied by the snow. With her abundant energy and organizational skills, we were rolling. The time was ripe for action and on March 11 letters went out inviting some key people to an April 14 planning session. To prepare for the meeting, Carolyn asked native plant societies nationwide for copies of their mission statements, constitutions, by-laws and annual programs. (Remember, all of this occurred before the internet and email.)

Peter Harstad, then CEO of the Indiana Historical Society, chaired our gathering at Marion County Extension Offices, Indianapolis. The following attended: Bill Brink, Lee Casebere, Rebecca Dolan, Becky Lomax, the Harstads, the Ingrahams, Jeffrey Maddox, Bill McKnight, Sue Nord, Chris Turner, Jean Vietor and Kay Yatskievych.

We represented many facets of the community - The Nature Conservancy, DNR's Division of Nature Preserves, academia, landscape architecture, art, horticulture, the Missouri Native Plant



Founders Ruth Ann Ingraham and Carolyn Harstad (above) and Bill Brink (right) were photographed at an INPAWS gathering in 1997.

of like-minded people who might get together at someone's home every few months to look at slides of folks' favorite wildflowers or at photos from a recent hike or trip. I never imagined the growth in membership, organization and activity that grew from that initial meeting."

So, how did it all begin?

My husband Joe and I invited seven people to meet at our Broad Ripple home in Indianapolis on February 25, 1993, to toss around the idea of starting a native plant society in Indiana. But eight inches of snow blanketed the city that day and only Bill Brink, who borrowed Chris Carlson's Ford Explorer with four-wheel drive, made it.



# is planted

## President's message

Society, and those who simply loved gardens and nature. That day we adopted the temporary name Indiana Native Plant and Wildflower Society (a still controversial moniker), accepted \$100 "seed" money from Bill Brink, owner of It's Great Outdoors, established \$10 charter memberships, and chose temporary leaders.

In May Indiana Native Plant and Wildflower Society became the official name and we adopted our statement of purpose. In June we approved the constitution and by-laws, agreed to hold meetings on first Saturdays and publish a newsletter with Chris Carlson as editor. Attendees elected Maddox as president, Brink vice-president, me as corresponding secretary, Anne Wilson recording secretary and Vietor treasurer.

Finally, Dana, surrounded by the preponderance of members from central Indiana, counseled, "The whole state needs to get involved."

Programs led by Brink took us to Holliday Park; Butler University's herbarium, prairie and Holcomb Garden and Arboretum; Marian College's wetlands (now EcoLab); Eagle Creek Nature Center's aquatic plants; and Purdue's research plots for prairie restoration. We rounded out that first year with a "Plant and Garden Goodie Auction" at Holliday Park; a wine and cheese reception to honor author Michael Homoya and photographer Lee Casebere for the publication of *Orchids of Indiana*; a hike in Pine Hills Nature Preserve; and a party at the Harstads' to celebrate 1993.

The year ended with close to 180 individual charter memberships and \$2,648 in the bank.

Lee Casebere, now retired from DNR's Division of Nature Preserves, remembers "very wonderful people from those early days as the organization began its journey to find its footing and set a worthy agenda to build upon ... INPAWS decided early on to not just become a garden club that uses native species in its landscaping. Taking a stand against invasive species became a rallying point." Casebere recalls that INPAWS, in its early years, gave monetary support to Bernd Blossey at Cornell University to help bring bio-control insects to the US to combat non-native invasive purple loosestrife.

1993 was just the beginning. In the next issue, I will feature high points in the history of INPAWS.

---

*Ruth Ann Ingraham is an INPAWS co-founder and its historian.*

---

### By Mike Homoya

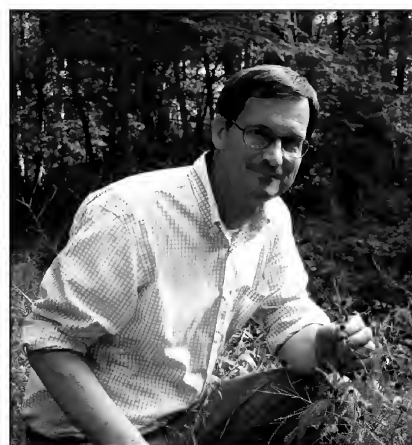
2018 – a year to remember. 2018 marks the 25<sup>th</sup> anniversary of the founding of INPAWS. In this issue of the journal, a must-read is Ruth Ann Ingraham's article at left about the origins of our organization. From a small group of dedicated native plant enthusiasts in the beginning, we now have a membership that has increased almost tenfold to a number approaching 1,000!

Ruth Ann is not only a founding member; she is *the* founding member of INPAWS. Not to diminish the considerable contributions of others who took part in INPAWS' formation and direction, but I sincerely believe were it not for Ruth Ann, INPAWS would not exist as the vibrant, influential organization we know today.

Recently a committee was formed to discuss ways to celebrate the momentous occasion of our 25 years of existence, and by the time you read this you'll already be aware of some of them. Be assured they will not only honor our past but will also point to our future.

Some good news recently is the dedication of a new state nature preserve in Clark State Forest near Henryville. Called Outbrook Ravine, this 500+ acre nature preserve will contain the largest protected expanse of native Virginia pine (*Pinus virginiana*) in the state. Also present is a rare and unusual native grass (*Calamagrostis porteri* ssp. *insperata*) that reproduces by vegetative means only and a species of goldenrod (*Solidago squarrosa*) that in Indiana is restricted to the preserve and its immediate surroundings. The goldenrod is the subject of a restoration effort involving propagation at Newfields (property and facilities at Indianapolis Museum of Art), The Nature Conservancy's Kankakee Sands Nursery, and the Indiana Department of Natural Resources Vallonia State Nursery.

I hope by now you're taking to the forests and enjoying our state's wonderful variety of spring wildflowers. See you out there! And remember: Always be botanizing! 🌿



Barbara Homoya





# Indiana Native Plant & Wildflower Society

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## DNR Field Days – you're invited!

Indiana DNR Division of Nature Preserves and its partner organizations are offering guided hikes in several state preserves this year. Participation is free, but registration is required at [www.in.gov/dnr/naturepreserve](http://www.in.gov/dnr/naturepreserve). Hikes are from 10 a.m. till 12 noon (Eastern) unless otherwise noted.

| Date     | Preserve                               | Partner              | County   |
|----------|--|----------------------|----------|
| April 21 | Big Walnut – spring wildflowers        | INPAWS               | Putnam   |
| May 12   | Violet & Louis Calli Preserve          | Community Foundation | Jennings |
| May 16   | Scout Ridge – 5:30-7:30 p.m.           | INPAWS               | Monroe   |
| May 19   | Russell Bend                           | INPAWS               | Parke    |
| June 2   | Twin Swamps (Central)                  | INPAWS               | Posey    |
| June 3   | Sweedy Hollow<br>(National Trails Day) | INPAWS               | Monroe   |
| June 16  | Gibson Woods                           | Lake County Parks    | Lake     |
| July 25  | Tefft Savanna – 6-8 p.m. (Central)     | INPAWS               | Jasper   |
| Sept. 8  | Bluffs of Beaver Bend                  | INPAWS               | Martin   |
| Sept. 15 | McCloskey's Burr Oak Savannah          | INPAWS               | Lake     |



# inpaws journal

Indiana Native Plant and Wildflower Society

Summer 2018

## Mulberry weed, a new threat

By Judith Lieberman

### Invasive plant profile

In the summer of 2016 I discovered a new plant near my back door. Coincidentally, I had just been putting together a personal notebook about invasive species, using many of the articles from the *INPAWS Journal*. The new plant seemed to look like one I had seen in my notebook. When I checked, sure enough, I found the plant, mulberry weed (*Fatoua villosa*),

After confirming the plant's identification with invasive plant expert Ellen Jacquart, at her suggestion I submitted the information to the GLEDN\* invasives database. I became alarmed when, only two or three weeks after seeing the first plant, I saw dozens of new seedlings of this species growing in the flower beds next to the back door and up through the bricks on my patio. Given the plant's prolific habit, it is easy to see why mulberry weed has potential to become the latest weed on a list of extremely invasive plants in Indiana.



Michael Becker – hortipedia.com

*"This noxious invasive has the trick of setting seed when it is still tiny," and can "explosively eject seeds up to four feet away."*

featured in an article by Kay Yatskievych in the 2004 Spring issue of what was then called *INPAWS News*. In her "What's New" column, Yatskievych wrote that this native of Asia showed up in Louisiana in 1964 and was rapidly spreading in the southern states, especially in nurseries and disturbed soil. Forty years later, it had appeared in Indiana.

### Inside

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| INPAWS at work           | 9-12, 15-17 |
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Mulberry weed, also known as hairy crabweed, prefers moist, shady conditions. Its seeds can tolerate cold temperatures, and it has been seen growing as far north as New York.

"It's a horrendous re-seeder," according to Sue Arnold, an INPAWS member who works at Newfields (formerly IMA) Greenhouse in Indianapolis. Arnold says copious mulberry weeds are growing behind the greenhouse and also at her residence in Brownsburg, following a path of spreading similar to what Yatskievych described in her 2004 article.

Mature plants can grow to three and a half feet, but this noxious invasive has the trick of setting seed when it is still tiny, only three to four inches! Because of its ability to explosively eject seeds up to four feet away, these plants are often found in colonies.

*New threat – continued on page 18*

# Wooly pipevine

## Larval host for pipevine

**By Katherine Newkirk**

The pipevine swallowtail (*Battus philenor*) relies almost exclusively on plants of the pipevine genus (*Aristolochia* spp.) to nourish its larvae. Dutchman's pipe or wooly pipevine (*A. tomentosa*) is native to southwestern Indiana, where the vine twines through shrubs and trees along stream banks, flood plains and bottomlands.

The species epithet *tomentosa* means "hairy" and refers to the leaves, hence "wooly." These overlapping, heart-shaped leaves can grow 4-6 inches in length.

Like many members of the genus, wooly pipevine contains aristolochic acid. While munching on pipevine leaves, pipevine swallowtail larvae consume and sequester the toxic acid, making them unpalatable to predators. The adult butterflies are also unpalatable

to predators such as birds.

Due to the butterfly's toxicity, "swallowtails are involved in a complex mimicry ring," writes Jeffrey Belth in *Butterflies of Indiana: A Field Guide* (2013). A number of

butterflies mimic the colors of the pipevine swallowtail, including the spicebush swallowtail, black swallowtail and eastern tiger swallowtail as well as the red-spotted purple and female Diana fritillary.

Hidden under the pipevine's leaves, greenish-yellow flowers bloom inconspicuously in mid- to late spring. Their shape gave rise to another common name, Dutchman's pipe, for the flower's resemblance to a deeply recurved smoking pipe of the sort often depicted in the hand of Sherlock Holmes. The flowers exude a fetid odor that draws small flies. Some crawl inside and get trapped by hairs in the flower's tube for about a day. As the anthers mature, the hairs wither and the flies escape—covered in pollen—hopefully buzzing off to fertilize other pipevine flowers.

The large, dense leaves made pipevines popular during the Victorian era for cooling and privacy, but "the decline of the porch has left pipevine without a horticultural niche," wrote William Cullina in his 2002 book *Native Trees, Shrubs, & Vines*. Yet, said Cullina, "its vigor, shade tolerance, and easy nature may yet find it a place in modern gardens."

While the foliage was once pipevine's chief appeal, many present-day gardeners choose pipevine to attract butterflies. If the Pipe-dream Project of the North American Butterfly Association has its way, more will nurture

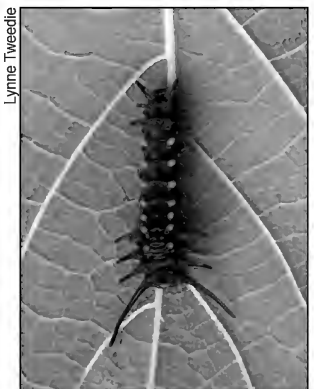
### Host plant profile



A female pipevine swallowtail butterfly deposits eggs on pipevine.



The tiny orange eggs oviposited by the female may change color as they age.



Orange spots on larvae advertise toxicity to predators.

# swallowtails

pipevine. "We believe that just as placing nesting boxes for bluebirds has led to a resurgence of that species, people can greatly help pipevine swallowtail by planting pipevines." (*nababutterfly.com/pipe-dream-project*).

Once established in the garden, wooly pipevine grows vigorous woody vines that can wind 15-30 feet along a sturdy wire, fence or other support and can spread 15-20 feet via underground stolons.

"I love mine!" writes Ellen Jacquart on INPAWS' Facebook group, "But you should be ready for it to spread quite aggressively if it is happy (enough sun and moisture). I ended up moving mine into a shaded habitat to keep it from being so aggressive."

Belth agrees: "I don't think the aggressiveness of this plant can be over-emphasized."

Missouri Botanical Garden ([www.missouribotanicalgarden.org](http://www.missouribotanicalgarden.org)) suggests, "If needed, cut back in late winter to control growth."

Some INPAWS members report that the plant can be slow to establish in the garden and that tender young vines may be nearly denuded by voracious caterpillars, while others report waiting several seasons for the reward of observing pipevine swallowtails patronizing their vines.

*Katherine "Kit" Newkirk is layout editor of the INPAWS Journal.*



Wikipedia



© Jeffrey Belth



Lynne Tweedie



Lynne Tweedie

Larvae often wander from the host before forming a chrysalis.

Adult pipevine swallowtails rely on nectar for nourishment. Nectar of thistles is among their favorites.

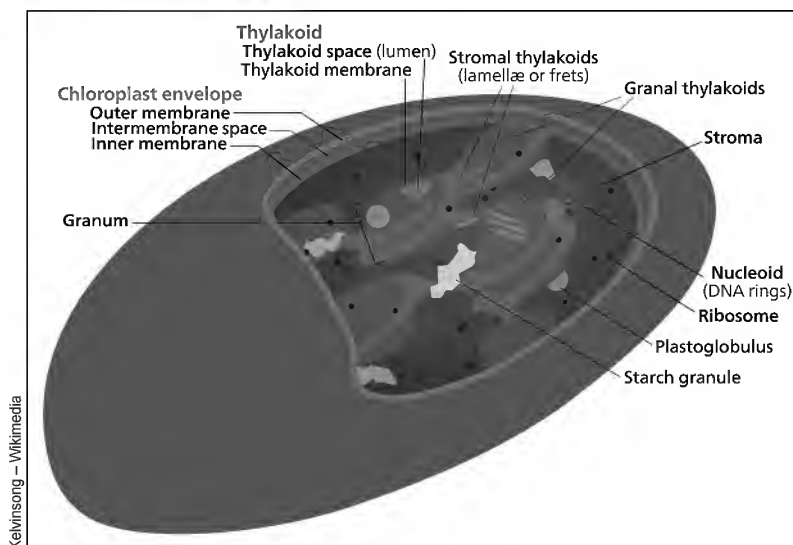
Above: foliage and flower of pipevine

# Photosynthesis: the backbone of life

## Botany basics

### By Adrienne Funderburg

Plants don't ask for too much in life; just some water, sunlight, soil and air will keep most plants happy and healthy. But how is it that a plant can turn such basic, inorganic components into food and energy for itself, and by extension, the rest of us? Simply put, the answer is photosynthesis. In this column, we'll deviate from the field of botany and brave some introductory chemistry and cellular biology in order to learn how plants make inorganic matter and the sun's energy available to the rest of us through the process of photosynthesis.



The structure of a chloroplast, the cellular organelle in which plants collect energy

Energy is needed to build sugar molecules, so energy collection is the first step of photosynthesis. It's performed by pigments found in the cells of the green parts of plants, be they leaf blades or stalks. On the cellular level, pigments are stored in *thylakoids*, which are folded membranes that look like small disks stacked atop one another (Evert and Eichhorn, 2013). A thylakoid stack is called a *granum*, and many *granna* (plural) are interconnected, bundled into cellular organelles called *chloroplasts* (Berg, 2008).

*Chlorophyll*, the main pigment found in plants, is the source of their iconic green hues; it reflects green while absorbing the blue and red portions of the light spectrum for energy. Other pigments, such as *carotenoids* (red, yellow or orange organic pigments), are also present in plants, but in lower

amounts, to absorb the wavelengths chlorophyll doesn't cover (Berg, 2008). They are visible in the fall as chlorophyll breaks down, causing leaves to change colors.

Pigment molecules in the thylakoids accept packets of energy, called *photons*, that are present in visible light (Berg, 2008). Photons energize an electron, which passes the energy along to another electron, which passes it again, like a wire carrying electricity. This system is called the *electron transport chain* (Berg, 2008). Ultimately, that light energy is converted into short-term chemical energy molecules ATP and NADPH (acronyms for long names given for their chemical structure), which the plant uses to make carbohydrates in the second step of photosynthesis (Evert and Eichhorn, 2013). The plant gets the electrons into the transport chain by dividing water molecules into their components. Each molecule gives the plant two electrons to use in the transport chain, as well as two *protons* (positively charged hydrogen molecules – the two H's in H<sub>2</sub>O) and one oxygen molecule. The oxygen molecules pair up and leave the plant as oxygen gas, which we and other animals breathe.

These ongoing energy transfer operations are referred to as the *light-dependent reactions* of photosynthesis. The second half of the photosynthetic process is *carbon fixation*, also known as the *Calvin cycle*. Carbon fixation takes place in the chloroplasts but outside of the grana, in a surrounding substrate called the *stroma* (Berg, 2008). In carbon fixation reactions, carbon molecules taken from carbon dioxide (CO<sub>2</sub>) gas are “forged” together into short chains by proteins in the chloroplasts and the energy-carrying molecules ATP and NADPH that are created in the light-dependent reactions (Berg, 2008). These short chains are paired up to create the carbohydrates glucose and fructose, two simple sugars. Through a bit more carefully crafted botanical biochemistry, plants can then make starches for storage, table sugar/syrup (sucrose) or cellulose for the walls of their cells (Berg, 2008; Evert and Eichhorn, 2013).

These sugars have carbon “backbones,” which makes them *organic compounds*. You and I are built of such compounds; they make up all living things and many substances that living things rely on. Photosynthesis is the most incredible feat plants perform: converting *inorganic* molecules, water

*Botany – continued on page 19*



# Florathon grows Letha's Fund

**By Barbara Homoya**

Groups of Hoosier native plant enthusiasts enjoyed natural areas, saw blooming spring wildflowers and showed their competitive streak – all while raising money for INPAWS' Letha's Youth Outdoors Fund. The first annual Florathon in April and May commemorated INPAWS' 25<sup>th</sup> anniversary. Teams solicited pledges, chose a day, then sought as many flowering native species as they could find.

One of the first teams to publish results was Quaker Ladies, led by Amy Perry. Despite a cool spring, the team located 33 species in bloom on April 17 at Holliday Park in Indianapolis. On May 13 the Bloomin' Stellarias, led by Ellen Jacquart, identified 150 species in four counties.

As of this writing, results were in from seven teams. Contributions to Letha's Fund from 60 donors totaled over \$2,700, and 10 new members were recruited. Final results will be in the fall *INPAWS Journal* and winners will be honored at the conference Nov. 3. Thanks to all who participated or donated!

*Barbara Homoya is a member of Central Chapter and chair of INPAWS' first annual Florathon.*



Katie Neill, Holliday Park office administrator

*The first Florathon team to report results was the Quaker Ladies. From left are Amy Perry, Wendy Ford, Terry Trierweiler and Norma Wallman. On April 17, they found 33 blooming plants at Holliday Park, Indianapolis, and raised over \$400 for Letha's Youth Outdoor Fund.*

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# Intervention seeks to save endangered clover

## Endangered plant profile

By Jonathan O.C. Kubesch

Running buffalo clover (*Trifolium stoloniferum*) (RBC) is native to Indiana and Ohio, as well as six other Midwestern states. According to some sources, loss of habitat has contributed to it becoming a federal endangered species (Hattenbach, 1996; Leugers, 2016). Presumed extinct around 1940, researchers rediscovered small populations in the mid-1980s along the Ohio River corridor.

Throughout the past 30 years, conservationists discovered and protected wild populations of RBC. Despite management plans and attempted reintroductions, the species remains in a perilous state in the wild (Leugers, 2016). Regulators report high fatalities in field translocations in Ohio and neighboring states. Low survival rates doom the clover's already small populations, thus an improved intervention strategy is imperative. Especially given the threat of land development in the Midwest, determining ideal transplanting procedures is crucial for endangered native species (Hattenbach, 1996).

The objective of a recent Ohio State University research study was to ascertain an optimal intervention-transplan-

tation strategy based on collecting field stolons (runners), generating new plants and using a general purpose fertilizer.

During an establishment phase, 23 to 25 individuals were collected from stolon cuttings of Cincinnati populations in May-June, 2017. These grew over the summer to become nursery plant material (Sparks and Barker, 2013). Stolons from these plants then went into root trainers for re-planting in the original forest sites in October-November, 2017. All Ohio sites generated at least four times as many plants as stolons originally collected. The greenhouse intervention resulted in a low fatality rate (five plants of 392 produced). Branching rate for stolons and continued stolon elongation varied. RBC grew easily in the green-

house, but would they grow well in the field?

The greenhouse-grown plants were field-acclimated for two weeks before planting. Transplants were planted in a grid in November, 2017, with half receiving a general fertilizer. Stolons-per-plant and stolon length were measured after planting, and plants were left to grow undisturbed from fall until spring.

Sites in Shawnee Lookout and Miami Whitewater Forest near Cincinnati were planted November 8, 2017, and monitored April 15, 2018. Sites were chosen near source populations, and plants were transplanted into areas without any existing RBC.

The Shawnee Lookout plants had a high survival rate (>90%). Approximately 70% of the Miami Whitewater Forest plants survived. Loss of plants during winter could be attributed to grazing, flooding and death of some smaller plants. By April, 2018, the larger fall plants remained significantly larger than the smaller plants. Fertilizer didn't appear to help; in fact, fertilized plants ended up smaller.

Greenhouse intervention has so far proven that vegetative collection can provide propagules (plant parts that can be used to start new plants) via non-destructive stolon sampling. Primary analysis suggests that RBC can easily be propagated (Barker and Sparks, 2014). Survival and growth differences will determine the effectiveness of transplants. Using small unfertilized transplants propagated from stolon tips appears to be the optimal strategy in transplantation experiments.

Greenhouse transplants survived the extremely harsh winter and variable early spring in Cincinnati. The negative fertilizer reaction may be due to the timing of the application; as the plants entered dormancy, fertilizer may not have been taken up. Or fertilizer burn may have injured some roots during field acclimation.

Given the initial success of the Cincinnati sites, similar strategies might translate into increasing the running buffalo clover populations in south-eastern Indiana as well.

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Leugers, S.D. 2016. A Review of the Current Status



Sarena Seibo

"Despite management plans and attempted reintroductions, the species remains in a perilous state in the wild."



# Iva Spangler: Early park naturalist

## By Terri Gorney

Indiana's state park system was founded in 1916, and naturalists were first hired in the 1920s to work from Memorial Day to Labor Day. Many early state park naturalists were educators. It was a perfect summer job for teachers who loved the natural world. One such teacher was Iva Spangler.

Born Feb. 14, 1898, on the family farm in Adams County, Iva grew up loving the wildflowers in their woods. She owned the family farm until she died and, as a teacher, sometimes used the woods as her outdoor classroom.

Iva started teaching in a one-room school-house and saved her money to attend Ball State University, where she graduated in 1923. She held master's degrees from University of Michigan and University of Wisconsin. After teaching in Decatur, she moved to Fort Wayne to teach biology at Central High School, where she founded a Nature Study Club. After mandatory retirement from Fort Wayne Schools at age 65, she taught biological sciences at Indiana University-Purdue University Fort Wayne until 1976.

Her distinguished teaching career was only one part of Iva's life. She was a member of the Indiana Academy of Science (IAS). At one IAS meeting in 1940, her colleagues included Eli Lilly, Frank Wallace, Stanley Coulter, W.S. Blatchley and Charles Deam.

Iva spent over 20 summers as a naturalist at Spring Mill State Park in Lawrence County, Clifty Falls State Park in Madison and Pokagon State Park in Angola. She shared her knowledge of birds, plants and wildlife on hikes in the parks.

## Clover – from left

of Running Buffalo Clover (*Trifolium stoloniferum*) in Ohio. Ohio Biological Survey Sparks, P.M., and D.J. Barker. 2013. Vegetative reproduction of *Trifolium stoloniferum* stolons. Ohio State University Sparks, P.M., and D.J. Barker. 2013. Susceptibility of Running Buffalo Clover, an endangered species, to Soybean Cyst Nematode. Ohio State University Barker, D.J., and P.M. Sparks. 2014. Running buffalo clover-lost, forgotten, or overlooked? American Forage and Grassland Council AFGC

Jonathan Kubesch is a master's degree student in the department of plant sciences at University of Tennessee, Knoxville.

According to Iva, her job was to "help visitors enjoy the beauty of the park."

Ten summers were spent at Spring Mill, where her most popular hikes led to the pioneer village and the caves. She wrote, "One of the outstanding attractions we always point out is the wonderful primeval forest that still exists here – there is a wonderful study of successions in the forest."

She created a special "gift" for Pokagon State Park guests in 1961 when she wrote and illustrated a simple color-coded "Flowers of Pokagon" guide and dedicated it "To all who enjoy wildflowers where they grow." It was published by the Indiana Department of Conservation (now IDNR). The guide is compact and could easily be held in the hand or in a back-pack. It features

120 wildflowers, most of which could be found all over the state, not just at Pokagon.

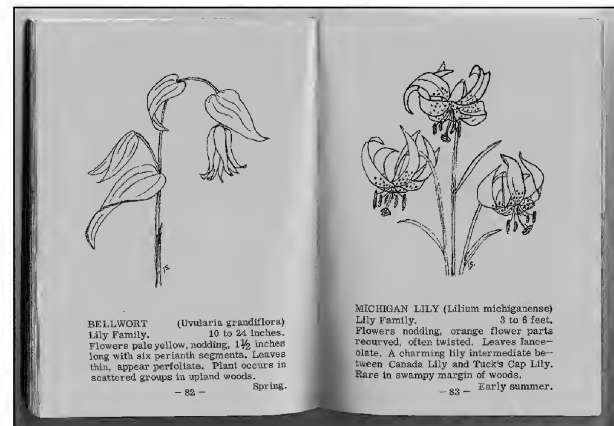
Iva wrote, "Pokagon is a park of flowers. The parade opens in early March when skunk cabbage leads the way, often through the snows of late winter. The procession continues through spring, summer and fall until, finally, after autumn colors have disappeared, the witch-hazel puts on its display of delicate yellow fringe, giving a preview of next year's parade."

The guide "was made possible," she said, "by years of experience in field work at Pokagon State Park and elsewhere." She hoped that users would become interested in conservation of our native flora.

After her death in 1986, Indiana Academy of Science remembered Iva Spangler as someone who was "very accommodating and friendly ... and knew plants well."

Terri Gorney is a member of INPAWS Northeast Chapter and vice-president of Friends of the Limberlost.

## Naturalist profile



Pages from Spangler's "Flowers of Pokagon"

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To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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### Submissions

All are invited to submit photos, articles, news and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view. Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org. Submission deadlines for specific issues are: Spring – Jan. 22 for April 1 mailing; Summer – April 22 for July 1 mailing; Fall – July 22 for Oct. 1 mailing; Winter – Oct. 22 for Jan. 1 mailing

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### Share

Please direct information of interest to webmaster@inpaws.org.

# President's message

## By Michael Homoya

What a spring it's been for INPAWS! After a chilly April, warm weather finally arrived and such a treat it was, especially for Florathon participants. Several teams traipsed the trails in Indiana's natural areas in pursuit of blooming native plants for the purpose of supporting a good cause. Missed out on the fun? Florathon chair Barbara Homoya shares more on page 5 of this issue (See "Florathon grows Letha's Fund").

Another exciting INPAWS project is the certification program for homeowners who grow native plants on their properties. Watch – this will grow by leaps and bounds as more people become educated about the virtues of native plants. Ellen Jacquart, chair of the Grow Indiana Natives program, spearheads the effort that we hope will inspire others to join the "growing" native plant movement. (See "Grow natives? Get certified!" on page 15 of this issue.)

I hope you were able to attend our annual spring native plant sale. Coordinators Tammy Stevens and Kelly Spiegel and a host of volunteers did a superb job. The plant sale is a big undertaking and a significant source of income for

our organization. Thanks to everyone!

If you're a regular at our plant sale you might remember that last year's auctioneer, author and Indianapolis-based WISH-TV reporter Dick Wolfsie, mentioned his confusion caused by the INPAWS signs in the parking lot. He thought he'd arrived at an



Katherine Newkirk

## Need a grant?

October 1 is the application deadline for INPAWS general fund grants. Awards will be announced Nov. 3 at the annual conference. Funds will be provided as reimbursement after a project is completed. Applications must fit one of three categories: research, land management and restoration, or demonstration garden.

However, Letha's Youth Outdoor Fund still accepts applications any time of year, restricted to educational field trips: transportation for students or youth groups, naturalist fees and supplies. These awards are also disbursed as reimbursements of actual costs.

For details, see the winter 2017-18 issue of *INPAWS Journal* and [www.inpaws.org/about-us/grants-awards-2](http://www.inpaws.org/about-us/grants-awards-2). 🌿

event for furry pets, "INPAWS." I've often wondered if other people were similarly confused. In my small but diverse survey of those unfamiliar with our organization, I found that when asked to name the focus of a group named "INPAWS," all had a similar response. That concerns me because it may be detracting from our mission. Therefore, I am asking our leaders and members to consider modifying our name and acronym, even if just a little. While there are other reasons I think we should refine our name, such as the redundancy of "native plants" and "wildflowers," I won't go into the details here. Instead I invite you to read my blog, accessible from the INPAWS home page via the gold button at the upper right. My hope is that a name change will provide us greater effectiveness in spreading our mission. Send your suggestions for a possible new name to [president@inpaws.org](mailto:president@inpaws.org). 🌿

*On May 12, INPAWS' 2018 native plant sale drew scores of buyers, earned nearly \$11,000 and garnered a dozen new members.*

# Journal to join Harvard database

The *INPAWS Journal* team is honored to announce that our quarterly publication is becoming part of Harvard University's Biodiversity Heritage Library (BHL), a global online database of literature accessible to both scientists and the public.



The invitation to participate came two years ago, but a signed agreement with Harvard was just concluded in April of this year. The INPAWS board resolved initial concerns about copyright liability and ultimately decided in favor. It is appropriate that it came to fruition during

our organization's 25<sup>th</sup> anniversary year.


Scores of publications are searchable in the BHL database, which has 136,268 titles to date. Founded in 2006, it is now a consortium of more than 30 organizations. Its contributors include universities, herbaria and botanical gardens around the world, the Library of Congress and individual collections. Topics range from agriculture and geology to insects, extinct species, flora and fauna of

the world, and even "A History of Cats." Volumes also include scientists' handwritten field notes that have been transcribed and digitized.

BHL's web site states its purpose: "In order to document Earth's species and understand the complexities of swiftly-changing ecosystems in the midst of a major extinction crisis and widespread climate change, scientists need something that no single library can provide – access to the world's collective knowledge about biodiversity."

*INPAWS Journal* has been published in some form since 1994, one year after the organization's founding. INPAWS co-founder and historian Ruth Ann Ingraham and former Journal editor and current webmaster Wendy Ford have assembled a set of back issues which BHL will digitally scan into its database. As of this writing, we do not know when *INPAWS Journal* will appear on the web site.

Writers who wish to submit articles to the Journal should keep in mind that if their work is published in its pages, it will automatically become part of BHL. INPAWS does not retain any rights to the submissions it receives, so writers and photographers, as always, are free to submit their work elsewhere after it appears in the Journal.

The Biodiversity Heritage Library can be found at [www.biodiversitylibrary.org](http://www.biodiversitylibrary.org). 

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Nov. 3, IUPUI – Indianapolis

## New conference date and venue!

### By Bill McKnight

The 2018 annual INPAWS conference will be held at IUPUI. Originally, our meeting was to be held at the Scottish Rite Cathedral in Indianapolis, but their attorney informed us that they will not allow us to use their building even though we have a valid contract dated August, 2017. (This is the second time in three years that a venue has done this to us.) The late notification created headaches for me, the conference organizer, as I already had the entire meeting planned down to the menu.

Fortunately I was able to find a substitute venue: Hine Hall on the IUPUI campus in Indianapolis. However, due to the change of venue, we also had to change the date. Rather than Oct. 27 as announced in Bloomington last October, the conference will be Nov. 3. We are sorry for any inconvenience this change may cause, but it was necessary and certainly not our fault.

There is a silver lining! This new date will allow us to avoid the humongous Future Farmers of America convention in Indianapolis and the Natural Areas Association meeting in Bloomington.

Following up on post-event evaluation suggestions from last year, there will be Friday afternoon field trips this year in the Indianapolis area, including a motor coach tour of Jens Jensen-designed properties led by Jensen expert Robert Grese, director of Matthaei Botanical Garden and Nichols Arboretum, Ann Arbor. Additional Friday afternoon field trips are being offered to Eagle's Crest Nature Preserve (Roger Hedge will be the guide) and to Woody Warehouse in Lizton (with Pete Berg at the helm). All field trips will have limited participation (50, 25 and 25 respectively), will be first-come, first-served, and will require preregistration separate from the conference registration. There will be a fee for the Jensen tour, which will start and end at Holliday Park. More details on these field opportunities will be forthcoming via the INPAWS web site, email, the fall journal and the conference flyer.

Speakers for the 2018 conference will be: Peter Del Tredici (Arnold Arboretum), Gerould Wilhelm (Conservation Research Institute), Laura Rericha (Cook County Forest Preserve District), Jesse Kharbanda (Hoosier Environmental Council), as well as Eric Knox and Paul Rothrock (IU Herbarium). This is an

august group and their presentations will be thought-provoking.

Hine Hall holds a maximum of 370 people. We expect it will fill, so we recommend you register a.s.a.p. If full, there will be no opportunity for walk-ins. We will keep an updated registration tally on the web site.

Lastly, given that 2018 is INPAWS' silver anniversary, other special activities and displays will be featured at the conference. For example, for locals and early arrivals (those staying in the Indy area overnight on Friday, Nov. 2) space has been reserved at the Slippery Noodle Inn for a pre-conference get-together, starting at 8 p.m.; live blues music begins at 8:30 p.m. We have taken care of the cover charge (just tell the doorman you're with INPAWS) but the food and drinks are on you. GO, INPAWS!

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*Bill McKnight is a member of INPAWS Central Chapter and 2018 conference chair.*

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### Conference seed swap returns By Mark Sheehan

Thanks to many INPAWS members, the seed swap at the 2017 annual conference was a great success. Participants from all over the state collected seeds from native species and brought them to exchange with others. Building on last year's momentum, the seed swap at the Nov. 3 conference promises to be bigger and better!

Think about what you might contribute. If you tend native plants that set viable seed, dry and clean the seeds and place them in wide-mouth, lidded jars (plastic or glass). Label clearly with the full common name of the plant and the county where the seeds were grown. If you know the scientific name, include that as well.

As last year, those who contribute seeds will be allowed to enter the seed swap before other conference-goers.

Seeds of some species require special care to remain viable after collection. The Lady Bird Johnson Wildflower Center web site is a great source of that information. For example, look under "Propagation" on this page for information about Virginia bluebells: [www.wildflower.org/plants/result.php?id\\_plant=MEVI3](http://www.wildflower.org/plants/result.php?id_plant=MEVI3).

Check the fall *INPAWS Journal* for conference day instructions. 🌿



*Members are invited to save seeds for swapping on Nov. 3.*

# Chapter activities heat up

## North

North Chapter met March 18 at the new Ethos Science Center in Elkhart to hear Sandy Messner of the Indiana Forest Alliance (IFA) deliver a presentation about IFA's work titled "Trees Talk." The organization has six staff members who work on state forest protection, including the controversial Yellowwood State Forest, carry out economic studies of forests, and conduct bioblitzes. Sandy encouraged members to read *The Hidden Life of Trees* by Peter Wohlleben. (See a review of Wohlleben's book in the spring, 2018, issue of *INPAWS Journal*.) She discussed the "Wood Wide Web," a group of studies of trees and their fungal network started in 1997 which explain how trees share carbon and other nutrients via underground networks.

As part of its outreach program, North Chapter had booths at the March 10-11 Growing Summit at St. Joseph County Library, organized by Unity Gardens of South Bend; the March 10 Master Gardener Spring Seminar at Goshen Greencroft Center; and the March 24 LaPorte County Garden Show at Michigan City High School.

The chapter's contribution to the celebration of 25 years of INPAWS was a May 5 hike at the private property of an INPAWS member in Jasper County. The hike was led by botanist and chapter member Scott Namestnik.

On June 16-17 members joined the Botanical Club of Wisconsin for a weekend of botany in the Badger State. The group spent most of its time in southeast Wisconsin in and around the Southern Unit of the Kettle Moraine State Forest, a region marked by various glacial land forms. Floristically, it's one of the jewels of the Upper Midwest. Excellent examples of oak savanna can be found throughout the state forest, along with high quality calcareous fens, and Scuppernong Prairie, the largest mesic prairie east of the Mississippi River. We saw plants both familiar and new to the Indiana botanist. It was a great weekend of botany!



The chapter's annual summer potluck will be in July, date to be announced. Members will enjoy a hike, a botany scavenger hunt, great food and fellowship. Educational summer hikes to natural areas are ongoing.

## South Central

SCINPAWS members toured the Indiana University Herbarium March 3 with Paul Rothrock, its associate curator. Rothrock also led a spring wildflower walk March 31 at a wooded ravine in northern Monroe County.

Chapter outings included a combined hike with Owen County Master Gardeners at Fish Creek Preserve April 21. Members staffed information tables at several organizations' spring events, organized a May Florathon team to raise money for Letha's Fund, and participated in The Nature Conservancy's (TNC) work day at Rabbit Hash Trail in Harrison County, followed by a tour of Harrison County Glades with TNC's southern Indiana land steward Dawn Slack.

*Upcoming:* Ellen Jacquart will lead a rugged hike Sept. 1, 10–11:30 a.m., at Cedar Bluff Nature Preserve in Monroe County. Participants must RSVP to Steve Dunbar at [clarencestevendunbar@hotmail.com](mailto:clarencestevendunbar@hotmail.com). Bring a lunch to enjoy atop the bluff.

## Southwest

Heath Hamilton, wildlife refuge specialist at Patoka River National Wildlife Refuge and Management Area, delivered a presentation to SWINPAWS members May 19 at Evansville Vanderburgh Public Library. His topic was local land restoration activities at Patoka River and the positive impact it has for wildlife.

Members enjoyed a great display of spring ephemerals on an April 21 educational hike at the 254-acre Ouabache Trails Park in Knox County. The park offered the opportunity to see native plants of woodland, wetland, along streams and near the Wabash River floodplain. The hike was led by Michael Broz, Terri Talarek King, Linda Wilcox, Linda Sutterer, Will Drews and Denise Egel.

*Upcoming:* On July 21 at 9:30 a.m., Ellen

# in warm weather

Jacquart, INPAWS vice-president and former director of northern Indiana stewardship for The Nature Conservancy, will speak on invasive plants and the work currently being done towards prohibiting their retail sale. Her talk will be part of the chapter's regular meeting at Wesselman Woods Nature Center in Vanderburgh County.

*Upcoming:* SWINPAWS will hold its 2<sup>nd</sup> annual native plant sale Sept. 8 at the Southwest Indiana Master Gardeners Display Garden at 3501 E. Lloyd Expy., Evansville, to raise money for the chapter, educate the public about native plants and provide native plant stock to the public. Time to be determined.

The chapter's regular bi-monthly meetings are on 3rd Saturdays in January, March, May, July, September and November. Each meeting features a guest speaker.

## Northeast

While waiting for wildflower season, Northeast Chapter organized a few indoor programs. Their first 2018 event was Feb. 10, when the chapter partnered with Little River Wetlands Project to host a native seed propagation workshop attended by 50 people. The group received classroom-style instruction about native seeds and where to buy them. Participants then enjoyed the hands-on portion — soaking seeds, adding sand and planting prepared seeds. A private grant allowed the chapter to supply take-home seeds to all attendees to further their skills. The group chose from seeds of 18 wildflowers, including white wild indigo and cardinal flower.

On March 20, "Frogs, Snakes, and Brew" allowed members to enjoy food and locally-brewed beer while Dr. Bruce Kingsbury, director of Indiana Purdue Fort Wayne (IPFW) Environmental Resources Center, spoke on how to make their yards more amphibian friendly. Attendees learned how to create *refugia* — areas of security — on their properties to protect and provide habitat for frogs and salamanders.


In April, chapter volunteers staffed tables to spread the word about native plants for

Earth Day events at Eagle Marsh, Oak Farm Montessori School and IPFW. In May, members handed out INPAWS brochures and answered visitors' questions alongside the native plant table at the Foellinger-



Betsy Yankowiac

Freimann Botanical Conservatory's Mother's Day plant sale in Fort Wayne. This popular four-day event, attended by more than 2,600 people, reached people who may have been unaware that planting natives is an option.

Part of the chapter's 2018 initiative pairs stewardship activities with other programs. The first two pairings combined hikes at Chain O' Lakes State Park (April 29) and Brooks Upland Dunes (May 6) with eradicating garlic mustard in those locations. Hikers enjoyed guided hikes to help them identify spring ephemerals, prior to the dirty work of pulling the garlicky-smelling nuisance plants. 

*A Northeast Chapter workshop on seed propagation gave participants hands-on experience. Soaking seeds to prepare for planting are, from back to front, Cammy Sutter, Laura Stine, Michael McKinney, Steve and Beth Hague.*



# Time to get planting

## By Melissa Brown

The city of London (UK) has asked residents to plant nine million wildflowers, one per resident. Indiana has almost seven million residents and about eight million acres that are not farmed. What if a proportionate number of native plants and wildflowers could be planted in the 35% of Indiana that is urban?

INPAWS' Grow Indiana Natives certification program is one way to pursue such a goal. (See "Grow natives? Get certified!" at right). Here are

some other opportunities to have a hands-on impact on the spread of native plants and wildflowers in Indiana.

On June 16, 10 a.m. to 2 p.m. (Eastern) at Spring Mill State Park, join Lawrence

County Keep Invasives in Check (KIC) members to learn about control of invasive Johnson grass (*Sorghum halepense*). See [www.sicim.info/news](http://www.sicim.info/news) for more information and events.

Around Aug. 1, check the DNR web page at [www.in.gov/dnr/forestry/8303.htm](http://www.in.gov/dnr/forestry/8303.htm) for the announcement of this year's cycle for Urban Forestry Assistance Grants. Last year, the announcement came three months before the Oct. 31 due date. DNR and federal monies are granted to improve, protect, maintain and increase the number of trees in Indiana communities.

The Nature Conservancy will have seed-collecting days at Kankakee Sands Nursery (1492 W 250 N, Morocco, IN, 47963) Sept. 8, 9 a.m. to noon (Central) and again in October and November. Find dates and details at [www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/events/index.htm](http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/events/index.htm). The seed will be used in restoration at Conrad Station Savanna.

Keep America Beautiful invites us to create events for National Planting Day Sept. 8. You

can register an event that celebrates native plants and trees at [www.kab.org/our-programs/national-planting-day](http://www.kab.org/our-programs/national-planting-day).

On Sept. 29 from 10 a.m. to 2 p.m. (Eastern), you can help with wildflower seeding at Brown County State Park (1405 S.R. 46 W, Nashville, 47448). DNR will host volunteers. Meet in the wildflower meadow on top of Weed Patch Hill, across from the fire tower. Information is at [www.in.gov/activecalendar\\_dnr](http://www.in.gov/activecalendar_dnr).

To tour the Weed Patch Hill meadow with David Mow Oct. 10, 1 to 2 p.m., meet by the Hoosiers Nest. Contact Patrick Haulter at 812-988-5240 or [phaulter@dnr.in.gov](mailto:phaulter@dnr.in.gov) for either event.

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*Melissa Brown is a member of INPAWS Central Chapter.*

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## Planting days

June 16 Spring Mill State Park  
Sept. 8 Kankakee Sands Nursery  
Sept. 8 National Planting Day  
Sept 29 Brown County State Park  
Oct. 10 Weed Patch Hill

## Terrestrial Plant Rule update By Dawn Slack

After completion of the official Indiana invasive plant list, the Indiana Invasive Species Council asked the DNR division of entomology and plant pathology to draft a proposed rule to address the sale of highly invasive terrestrial plants in Indiana. In 2013, DNR drafted such a rule that includes most of the terrestrial plant species from the official Indiana invasive plant list that are ranked "highly invasive."

The proposed Terrestrial Plant Rule was submitted to the Rules Moratorium Committee in the Office of Management and Business (OMB) in October, 2017, for initial review and exemption from the rules moratorium.

The OMB requested several changes to the draft rule, none of which, thus far, has included removal of any species from the proposed rule. DNR has submitted all the requested changes to OMB for review. If OMB is satisfied, the proposed rule will be included on a future Natural Resource Commission (NRC) agenda and be considered for preliminary adoption. The NRC meets every other month.

To get on a Listserv email list to receive updates about the Terrestrial Plant Rule, contact me at [dawn.slack@tnc.org](mailto:dawn.slack@tnc.org).

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*Dawn Slack is southern Indiana land steward with The Nature Conservancy's Blue River field office in Laconia and chair of the Invasive Plant Advisory Committee.*

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# Grow natives? Get certified!

**By Ellen Jacquart**

INPAWS has expanded its Grow Indiana Natives program to allow home gardeners to certify their native gardens. If you are growing native plants and working to get rid of invasive plants, you can apply for certification.

Initially, Grow Indiana Natives was aimed at certifying native plant sellers and connecting them with customers looking for native plants. The plant seller certification has two levels, "Basic" certification for those who sell native plants, but still sell some invasives, and "Invasive-Free" certification for those who not only sell native plants but agree not to sell invasive plants.

The sellers program continues to grow, with over 40 businesses certified. The program expanded in January to include landscape designers who specialize in native plants and do not design with invasive plants. All businesses in the Grow Indiana Natives program can be found at [growindiananatives.org/buy-native](http://growindiananatives.org/buy-native).

The most recent expansion to include certification for native plant gardeners in Indiana fills a niche that has been empty until now. Programs such as National Wildlife Federation's (NWF) Certified Wildlife Habitat program, while valuable, do little to decrease the use of invasive plants in landscaping. NWF does suggest that "sustainable practices" be used and that "exotic species" be controlled. However, no mention is made of invasive plants or the difference between exotic species (non-natives) and invasive plants (both non-native and spread by landscaping practices, causing economic or environmental harm or harm to human health). Nor does the NWF program identify which commonly used species are invasive.

To address this gap, the Grow Indiana Natives certification program for native gardens provides applicants with information on which common landscaping plants are invasive here in Indiana

(e.g., purple winter-creeper, burning bush, Callery pear, Japanese barberry, Norway maple) and requires that the applicant is not only growing Indiana natives but also working to get rid of invasive plants on their property.

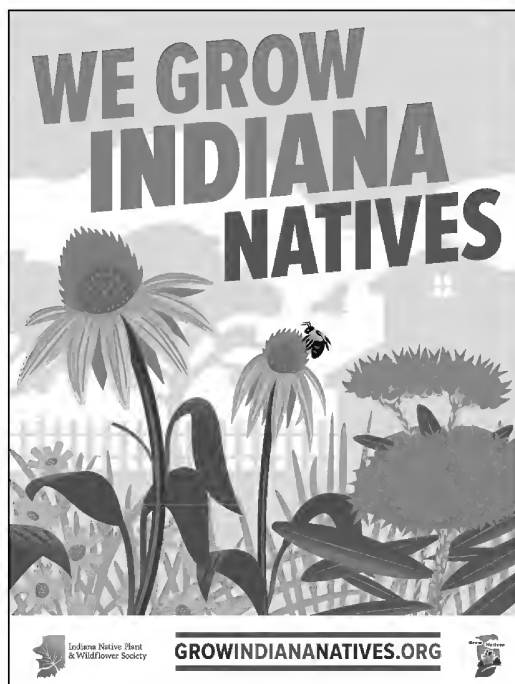
Certification is free.

An application form is at <http://growindiananatives.org/native-garden>. Applicants who are certified will receive a window cling with the Grow Indiana Natives logo and will be eligible to purchase the new "We Grow Indiana Natives" 9" x 12" metal yard sign. The sign is \$25 for INPAWS members, \$35 for non-

members (including shipping).

Proudly declare your support for native plants – certify your native garden!

*Ellen Jacquart is a member of INPAWS South Central Chapter and chair of INPAWS' Grow Indiana Natives program.*



## Guided hikes set

DNR's Division of Nature Preserves announces three upcoming guided hikes. Participation is free, but registration is required at [www.in.gov/dnr/naturepreserve](http://www.in.gov/dnr/naturepreserve).

July 25 – Tefft Savanna, Jasper County  
Sept. 8 – Bluffs of Beaver Bend, Martin County  
Sept. 15 – MCCloskey's Burr Oak Savanna, Lake County

# 25 years of INPAWS:

## By Ruth Ann Ingraham

While Carolyn Harstad served as president of INPAWS from 1996 to 1998, she also authored *Go Native!* In this guide to landscaping with native plants, the Minnesota native writes of her hope that INPAWS would lead the way to a sound environmental future for her adopted Hoosier state.

As co-founders, Carolyn and I have watched INPAWS grow during its 25-year history. Paid memberships now approach 1,000; Facebook followers exceed 10,000, and seven active chapters cover Indiana from Lake Michigan to the Ohio River. Each of us lends a hand, or a shovel, one way or another to fulfill Carolyn's vision and help Hoosiers understand the vital role native plants play in the web of life.

With a virtually all-volunteer crew, INPAWS uses many "tools" to span the gap between appreciation of our natural environment and a commitment to its

preservation. We rescue plants, write for the *Journal*, attack invasive species, coordinate annual conferences, run book sales, open our gardens to visitors, staff booths, develop ground-breaking projects such as *Grow Indiana Natives*, organize engaging programs and field trips, lead strategic planning sessions, donate and price thousands of plants at our annual sale, evaluate grant proposals, track membership data, serve as officers and committee chairs. INPAWS is a complex organism, but volunteers make an enormous difference.

Dedicated presidents have led the way, beginning with Jeffrey Maddox and followed (in chronological order) by Carolyn Harstad, Ruth Ann Ingraham, Carolyn Bryson, Linda Oxenrider, Becky Dolan, Nancy Hill, Karen Bird, Tom Hohman, Art Hopkins, Jeff Pitts and now Mike Homoya. Though never president, Wendy Ford has worked tirelessly behind the scenes, lending her organizational and technical skills to nearly every facet of our organization.

With guidance from these leaders, INPAWS has surpassed Becky Dolan's early expectations that we might "get together" in members' homes to talk about gardening with native plants and perhaps show slides. It's impossible to fully document our work, but I've chosen a few highlights.

## Invasives

One of INPAWS' most important efforts is the focus on learning about and controlling non-native invasive plant species such as garlic mustard, Asian bush honeysuckle and Callery pear. Education is key, coupled with hands-on work.

"In the 1990s, the general public really wasn't aware of the issue of invasives," recalls Ellen Jacquart. "INPAWS had no educational materials on the topic so a group of us, including Ken Collins from the Natural Resources Conservation Service and Lee Casebere from DNR's Division of Nature Preserves, created a brochure. 'Invasive Plants in Indiana' debuted in November, 1999. Many reprints followed and members handed out over 100,000 of them at events. In 2015, an updated version came out – 'Invasive Plants in Indiana: Pretty Awful.'"

Before Ellen retired from The Nature Conservancy, while continuing to chair INPAWS' invasives education committee, she headed DNR's Invasive Plant Species Assessment Working Group (IPSAWG).

"That (IPSAWG) project," Ellen explains, "eventually produced the official Indiana Invasive Plant List (<http://indianainvasivespecies.org>), which has now been used to draft a rule that will make it illegal to buy or sell highly invasive plants in Indiana."



Ruth Ann Ingraham

The late Donovan Miller was the first leader of the youth outreach effort.

# Growing like wild

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In 2009, Ellen co-founded MC-IRIS, a Cooperative Invasive Species Management Area, in her home county of Monroe. MC-IRIS initiated Go Green, Grow Native in 2011 to encourage vendors to identify native plants and discourage the sale of invasives. That program has grown into the statewide Grow Indiana Natives program sponsored by INPAWS.

"INPAWS hopes that someday highly invasive plants will be banned from sale in Indiana," Ellen notes, "but until that happens, the Grow Indiana Natives certification program is our initiative to encourage plant sellers to voluntarily stop selling invasive plants and sell more native plants. Grow Indiana Natives recently added native plant (landscape) designers and native garden certification categories."

## Grants

Thanks to our donors and to proceeds from book sales and our annual plant sale/auction, INPAWS has discretionary funds to make grants to projects small and large. Our first award of \$50 supported the first annual "Wildflower Foray" in Brown County in 1995, a 3-day series of hikes and nature programs that continues to this day. In 1998, INPAWS helped fund ongoing research into biocontrol of garlic mustard at Cornell University with a \$1,000 grant.

Close to \$60,000 has been awarded over the years for requests of \$1,000 or more. With our financial assistance, land trusts and DNR's Division of Nature Preserves have purchased and protected valuable natural properties. In Indianapolis, we supported creation of the linear Bill Brink Memorial Garden along the hiking/biking Monon Trail in Indianapolis in honor of late INPAWS co-founder Brink. We helped fund the planting of a large wildflower meadow at Brown County State Park and the eradication of kudzu in southwestern Indiana.

The grants committee has evaluated dozens of requests for amounts under \$1,000. Awards total close to \$30,000, benefitting all parts of the state. Grants include funds for educational gardens at nature centers, zoos and schools and for a graduate student's research into

mycorrhizal fungi in the sand prairie in north-west Indiana.

## Letha's Fund

In 2009 Letha's Fund for Youth Outdoors awarded its first grants to enable school children to spend quality time in natural settings. With these funds, teachers introduce children to the wonders of the outdoor world and extend Letha Queisser's passion for wildflowers and Indiana's native plants to a new generation.

Memorial contributions came to INPAWS following Letha's death in 2007. Council member Tom Hohman proposed that we use these funds to bring children into contact with nature. Because of those initial gifts, additional donations from individuals and annual allotments from INPAWS, close to \$57,000 has enabled more than 15,000 students to make day trips to Merry Lea Environmental Education Center, Sycamore Land Trust properties, Marian College EcoLab and other high-quality destinations.

Photos, handwritten thank-you letters and drawings from the children energize committee members who evaluate grant applications. Recently, a large anonymous donation to the fund in honor of Dan and Sophie Anderson has stimulated the committee to give even greater attention to children in underserved communities.

The late Donovan Miller was the first leader of the youth outreach effort. In summer, 2008, he wrote in *INPAWS Journal*, "What we're aiming for at this stage of a child's life is to hook 'em on nature and wild places, to get them interested in even the simplest things."

*Footnote:* I followed Letha on guided walks in Indianapolis parks. Down on hands and knees one day, Letha pointed out differences and similarities between squirrel corn and Dutchman's breeches, and so my appreciation for spring wildflowers began – long before the creation of INPAWS.

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*This overview of INPAWS' first 25 years will continue in the fall, 2018, issue of INPAWS Journal.*

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*Ruth Ann Ingraham is a co-founder of INPAWS and its official historian.*

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*Donovan Miller was the first leader of the INPAWS youth outreach effort that enabled these sixth-graders from St. Richard's Episcopal School, Indianapolis, along with 15,000 other kids, to spend quality time in nature in the past ten years.*

## New threat – from page 1

The plant, an herbaceous annual with a taproot, has a slight stickiness because of fine hairs on the stem and leaves. This enables the seeds to spread even farther by clinging.

Like all non-natives, without the checks from its natural environment, this exotic invader has nothing in our environment – other than human

effort – to stop its destructive establishment. Hand pulling is the easiest way to eradicate the species. It is necessary to discard the plants in a sealed trash bag. Large infestations can require pre-emergence herbicides like Dimension 2EW or post-emergence herbicides such as Round-up.

The triangular leaves of mulberry weed are alternate, with an elongated heart shape. The teeth on the margins

are rounded. The light green, papery leaves are hairy on their upper sides and have long petioles, or leaf stalks. Flowers and then fruit appear on a stalk that grows from the leaf axil, where the petiole meets the main stem; this is a key to distinguishing this plant from similar ones. The flowers have no petals and grow in an aggregate; the pistils become fleshy as they ripen and take on a berry-like appearance.

At first glance, mulberry weed looks rather like a mulberry tree seedling, hence the name. This is true for either the non-native, but more common, white mulberry (*Morus alba*) or the native red mulberry (*M. rubra*). These tree species have elongated, heart-shaped leaves with serrated edges and conspicuous berries. Although white mulberry has leaves similar to mulberry weed, its clusters of berries growing on very short stalks differentiate it from mulberry weed. Like mulberry weed, white mulberry is also invasive. Red mulberry is differentiated from mulberry weed because its leaves have pointed serrate edges, not rounded, and its single fruit grows from the stem, not the leaf axil.

Mulberry weed also resembles lemon balm (*Melissa officinalis*) and false nettle (*Boehmeria cylindrica*). However, lemon balm's leaves are opposite instead of alternate, thicker and more convoluted. False nettle's leaves are also opposite, and the teeth on its leaves are pointed, not rounded. Neither lemon balm nor false nettle has fruit on a stalk.

This summer, if you see a strange plant in your yard that has heart-shaped, serrated leaves, take a second look. It might be invasive mulberry weed.

\* GLEDN – Great Lakes Early Detection Network, a network of states including Indiana that works to locate newly arrived invasives. You can report any invasive plant to GLEDN by using a phone app. Once the ID is confirmed, GLEDN has a warning system to alert state DNRs and nature preserves. Go to [apps.bugwood.org](http://apps.bugwood.org) or download the app from the App Store for Apple for iPhones or Google Play for android phones.

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*Invasive.org*. Center for Invasive Species and Ecosystem Health. [www.invasiveplantatlas.org/index.html](http://www.invasiveplantatlas.org/index.html). Mulberry weed, *Fatoua villosa* (Thunb.) Nakai

Judith Lieberman is a member of INPAWS Central Chapter.



Mulberry weed resembles the seedlings of mulberry trees as well as lemon balm and false nettle.

Wikimedia

## Wetland – from back page

## Botany – from page 4

Managed wetland preserves are excellent places to encounter some of Indiana's most striking wetland flowers and graminoids. DNR's Division of Nature Preserves manages about a dozen such preserves throughout the state, including Pipewort Pond Nature Preserve in Elkhart County, Tippecanoe River Nature Preserve in Pulaski County and Beanblossom Bottoms Nature Preserve (owned by Sycamore Land Trust) in Monroe County.

Among wetland species, some of this author's personal favorites are cardinal flower (*Lobelia cardinalis*), giant bur-reed (*Sparganium eurycarpum*) and fringed sedge (*Carex crinita*).

A basic familiarity with wetlands and the fascinating plants to which they are home can add value to any outdoor experience. Stumbling upon one's favorite wetland flower or graminoid adds a delightful bonus to a birding, hiking, fishing, hunting or photography expedition. For those who take the time to notice, wetlands can provide a great deal of enchantment and wonder.

*Landon Vine is a member of INPAWS Central Chapter and a wetland ecologist with V3 Companies in Indianapolis.*

and carbon dioxide, into organic ones that other organisms can use. Plants quite literally build the backbone of life on earth. If that wasn't amazing enough, the whole process is solar-powered. This bit of chemistry and cell biology is a mere sketch of photosynthesis, but even a basic understanding of the process can help us gain a deeper appreciation for the botanical world.

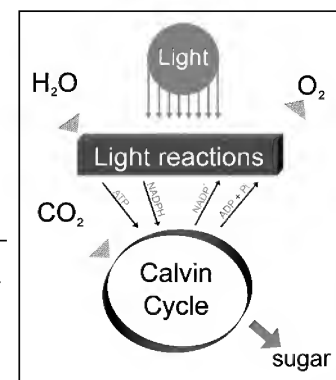
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*Adrienne Funderburg graduated with a degree in biology from Huntington University in May and is now working as research coordinator for Lilly Center for Lakes & Streams at Grace College in Winona, IN. This is Adrienne's last "Botany Basics" column. We wish her well.*

*Mahala Wilson, a conservation/ecology major at Franklin College, will begin writing the column starting with our fall issue.*



Daniel Mayer, Wikimedia

*Simplified overview of photosynthesis*

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# Wetland plants charm the careful observer

*By Landon Vine*

Wetlands offer a frequently under-appreciated opportunity for native plant viewing. Swamps, bogs and the fringes of ponds, rivers and lakes are home to a surprisingly diverse world of forbs (herbaceous plants), graminoids (grass-like plants), trees and shrubs. These places offer intrigue and beauty for the native plant enthusiast who knows what to look for. But what exactly distinguishes a wetland plant from its counterparts on drier land?



Christian Fischer - Wikimedia

*Smartweed, a denizen of wetlands, was reportedly used by some native Americans as medicine and occasionally for food.*

horsetails (*Equisetum* spp.) and various grasses (family Poaceae) and sedges (family Cyperaceae) are common in these areas.

In the woods, a thick, densely-packed layer of leaves covering a depression in the ground in an otherwise dry area is a strong indicator of wetland conditions. Such leaf layers will typically be much darker in color than the adjacent leaf litter, having been "stained" by incessantly wet conditions. An oak (*Quercus* spp.) wetland populated by mature pin oaks (*Q. palustris*) in a quiet woods can be quite pleasant to behold.

A plant is considered a wetland plant, or *hydrophyte*, when it is adapted to life in soils that are at least partially deficient in oxygen due to excessive water. While for many of us, the term "wetland" conjures an image of a knee-deep pond, wetland conditions can actually exist anywhere there is enough water to suppress oxygen in the soil.

Survival in an oxygen-suppressed soil is difficult. Plants cannot access oxygen using the means employed by their peers on dry land, and soil nutrients can become scarce. To survive in these conditions, wetland plants are equipped with fascinating anatomical features. *Aerenchyma* are special tissues that allow wetland plants to convey oxygen from their leaves above water to their roots. Some wetland plants grow elongated stems in order to reach above the level of the water. Many wetland trees and shrubs use adventitious roots, which allow plants to sprout new roots from parts of the plant other than the actual root system, in order to spread their root systems laterally rather than downward into the oxygen-suppressed soil.

The fringe of a pond, lake or stream can be an excellent place to make one's first acquaintance with wetland plants. Native smartweeds (*Persicaria* spp.),

*Wetland* – continued on page 19





# inpaws journal

Indiana Native Plant and Wildflower Society

Fall 2018

## Botany basics

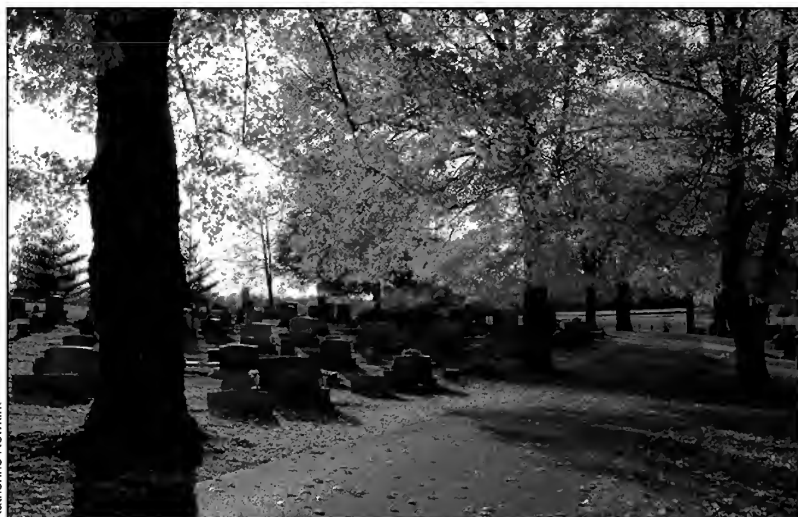
## What causes fall foliage to change color?

*By Mahalah Wilson*

With the first day of fall having passed on September 22, there comes an anticipation for the signs of the season. Fall may bring to mind things such as the smell of a bonfire, the warmth of a flannel shirt on a brisk morning or the festive assortment of squash and apples at local vendors. Yet there is one trademark of the season that cannot be overlooked.

photosynthesis and responsible for the green color of leaves in the summer months. These compounds absorb the reds and blues of the visible light spectrum (May, 2018). Chlorophylls cannot absorb green light. This reflected green light gives leaves their characteristic color.

While cooler weather is one of the variables that affect the changing of leaves, the change is also dependent on length of daylight and amount of water (Palm, 2018). Plants are sensitive to the amount of sunlight they receive, and for good reason! Without sufficient sunlight, plants can die from the inability to produce their "food." As fall



Katherine Newkirk

From bright yellows to deep reds, the colors of the changing leaves shine in stark contrast with the bright blue of a fall sky. Their beauty is undeniable, but what causes the green of summer to give way to the colors of fall? To answer such a question, we will have to investigate the basic functions of leaves and the factors that cause them to change.

To begin, the leaves of any plant are essential in allowing the plant to convert sunlight energy, water and carbon dioxide into a more readily usable substance for growth. This is most often a form of sugar or starch, created through the process of photosynthesis. These conversions occur at the molecular level. Plants have chemical compounds called chlorophylls that are essential for

descends upon the landscape, the length of day begins to shorten. While it may seem that shorter days would trigger such a change in plants, it is actually the length of darkness that triggers a slowing down of photosynthesis. In fact, both the onset and end of dormancy are dependent on length of night (Mauseth, 2017). With the cooler temperatures and lack of need for photosynthesis, plants no longer actively maintain their chlorophyll supplies, and the compounds begin to degrade. This then allows secondary pigments in the plant to come into view.

Secondary pigments such as carotenoids and anthocyanins are what most often present the yellow-orange-red spectrum of non-photosynthesizing leaves (O'Keefe and Lee, 2004). They are present throughout the growing season, but not in quantities as large as that of the chlorophylls. The colors of leaves can also be affected by the amount of rain in the summer months of the same year.

## Inside

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*Botany – continued on page 3*

# 10,000 doses of vitamin N

**By Amy Perry**

Once a weed-infested area relieved only by deer paths and staffed by a volunteer, Avon Outdoor Learning Center west of Indianapolis has blossomed into a multiple award-winning, vibrant and eclectic collection of habitats and educational tools supported by a full-time teacher. The Center is a powerful tool, beloved by the community and combatting the problems

discussed by Richard Louv in his 2005 book *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*.

The success of the center is due to the vitality and vision of center coordinator Carol Ford, a 22-year parent volunteer who cleared the seven acres of honeysuckle and poison ivy; to the

knowledge and dedication of Jennifer Davies, now the full-time teacher, who has volunteered countless hours over the years; and to the support of the community, which raised funds to save the center during a financial crisis.

Located on State Road 36, the center serves students from pre-kindergarten to 12<sup>th</sup> grade in the 12 Avon schools. It boasts two miles of hiking trails, a prairie (funded in part by an INPAWS grant), riparian wetlands, lowland and upland forests, stream access for those in wheelchairs, a beehive, an insect house (also home to mice), tree identification signs, a dock next to a shallow pond, a butterfly garden, a vegetable garden, a brush pile, a bioswale and a restored 1840s cabin.

The center teaches traditional academic subjects using natural objects and phenomena. In the 2017-2018 school year alone, 10,000 children visited. Ford explains, "When a classroom teacher requests a lesson to meet a certain [state-designated] standard, Jennifer will develop a lesson plan. She connects the classroom with the out-of-doors." For example, math students learn about Fibonacci

sequences and other patterns in nature at the center.

Just by being outdoors, the students receive the intellectual, physical, developmental and emotional benefits that Louv and others have pointed out most kids today are missing.

Crouching down to make herself two feet tall, Ford says, "This looks like Brown County from a kid's standpoint. Kids never get outside — one of the things we do here is teach them how to breathe, and how to calm down, and listen, and be." She pauses. "Vitamin N."

The center receives help from many local businesses, community groups and wildlife-related professions. Duke Energy is helping create a playscape with log circles to stack and roll, sticks to build with, and puddles — things that will help the kids learn how to take risks. Hendricks County Master Gardeners and INPAWS help with invasives removal. Local soil and water conservation employees lead sessions.

Former students have told Ford that visiting the center encouraged them to go into wildlife- or nature-related professions such as forestry or conservation.

The Center is not open to the public because it is part of the school grounds. However, it will be open to INPAWS members the second Saturday of any month from 9 a.m. to 3 p.m., as long as an INPAWS member contacts the center to request a visit. It is well worth seeing.

If you would like to volunteer or donate to the center, see its web page at [www.avon-schools.org/domain/108](http://www.avon-schools.org/domain/108). To those who would like to start an outdoor learning center, Ford advises not to try to do it alone. She refers readers to [www.in.gov/dnr/forestry/files/fo-Guidelines\\_Outd\\_Labs.pdf](http://www.in.gov/dnr/forestry/files/fo-Guidelines_Outd_Labs.pdf).

To learn more about nature deficit disorder, resources are in the book *Last Child in the Woods* and at [www.childrenandnature.org](http://www.childrenandnature.org), a network founded by Louv.

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*Carol Ford was interviewed in the fall, 2007, issue of INPAWS Journal; the article can be accessed at [www.biodiversitylibrary.org](http://www.biodiversitylibrary.org), as detailed in the summer, 2018, issue.*

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*Amy Perry is a member of INPAWS Central Chapter. She assists with the chapter's "pop-up" garden tours.*

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Carol Ford



Katherine Newkirk

*A restored 1840s cabin (top) welcomes visitors to the Avon Outdoor Learning Center. Directional signs give guidance inside the natural area.*

Undue stress on trees can cause them to lose their leaves early and change the color effects of the various secondary pigments. A summer with sufficient rainfall and a fall with cool temperatures that remain above freezing are two of the best conditions for long-lasting, colorful leaves.

Not only do leaves change color, they are also shed by their plants, thus the coining of the season's name, "fall." This is caused by another process known as leaf *abscission*, or the programmed loss of the leaf by a plant. Because abscission is programmed by the plant and not by external forces, the plant is able to reabsorb most valuable materials before the leaf is shed. These materials can include sugars, minerals and nitrogen from the degrading chlorophyll molecules. The plant can then store these compounds in its roots for use in the next growing season. Before the leaf falls, the plant produces a layer of protection against infection. The *abscission zone* is produced where the leaf attaches to the stem and is perpendicular to the *petiole*, or stalk of the leaf (Mauseth, 2017). The plant signals this area to weaken, and the leaves are shed, commonly by rain events or wind. All that is left are the leaf scars on the tree where the abscission zone was formed.

The autumn colors of leaves can vary from the browns of oaks to the deep reds and purples of sweetgums and the yellows of birches and maples. They can even vary from year to year on the same tree. Nevertheless, the onset of autumn colors provides an outward display of a forest's fall into slumber for the colder winter months that lie ahead.

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*Mahalah Wilson is a junior at Franklin College. She is pursuing a degree in biology with a focus on conservation and ecology.*

### By Barbara Homoya

A tisket, a tasket, how many blooming wildflowers in your basket? This could have been the rhetorical question asked of 50 native plant enthusiasts this spring.

Between April 14 and May 13, 13 teams scoured 23 Indiana counties with the goal of finding (listing only – no picking) as many blooming native plants (as well as ferns) as possible.

The Bloomin' Stellarias team led by Ellen Jacquart came out on top with a total of 150 species, with We the North (leader Scott Namestnik) in second place with 128 species. The Forestry (leader Peyton Phelps) searched the most counties (six) and one team – the Fab Fords (leader Wendy) – included three generations of team members.

Over \$4,000 was raised for Letha's Youth Outdoors Fund from nearly 100 donors. In addition, INPAWS now has 19 new members and many other people learned about the organization.

Dottie Warmbier, leader of the Fish Creek Preserve Belles said, "Thank you for a super awareness-building event!" Lisa Slott, Flower Power team leader commented, "What a nice time we had. Bendix Woods in St. Joe County gave us the best show of blooms."

Several team members remarked how much they enjoyed visiting Indiana's natural areas during the Florathon. Some teams are already setting goals for next year, eager to "fill their baskets" even fuller. We hope for more teams, participants and donors for Florathon 2019 – plan now to join in the fun!

*Barbara Homoya is a member of Central Chapter and was chair of INPAWS' first Florathon.*



Ellen Jacquart

*The winning Bloomin' Stellarias Florathon team found 150 blooming species. From left, David Mow, Paul Rothrock, Marc Evans, Steve Dunbar, Ellen Jacquart (front)*

# Field notes

## By Patricia Happel Cornwell

**New state insect!** If Indiana's new state insect had a theme song, it would be "You Light Up My Life." The July/August issue of *Outdoor Indiana* reports that Say's firefly (*Pyractomena angulata*), a

lightning bug of the family Lampyridae, became our official state insect in March. Native to Indiana, it was first identified by Thomas Say of New Harmony in 1826.



Recently named Indiana's official insect, this firefly is named for the entomologist Thomas Say (1787-1834) of New Harmony.

**Rare bee:** In 2017, Hendricks County resident and entomologist Robert Jean found a single individual of a native bee (*Andrena uvulariae*) that was attracted to bellwort flowers (*Uvularia* genus). This year, however, he found them to be "plentiful in Burnett Woods Nature Preserve," a property owned by Central Indiana Land Trust. A July 4 online article by *WTIU News*, "Rare Bee That's New to Indiana Found in Avon," says the trust's removal of invasive plant species is credited with creating the habitat the bees need.

**Speaking of bees:** Walmart has filed a patent application for a design for drones that might be able to pollinate crops, locating flowers with tiny sensors and cameras. In "Can Robobees Solve the Pollination Crisis?" in the spring, 2018, issue of the Xerces Society's quarterly *Wings*, Eric Lee-Mäder and Scott Hoffman Black say not so fast. They write, "Focusing solely on crop pollination and failing to take the pollination of native plants into account may well lead to a deterioration in the plant communities that make up the very fabric of our environment."

**Preserve grows:** According to a June 9 *Herald Times* article, "Conservation group adds 84 acres to Indiana nature preserve," Sycamore

Land Trust has acquired a "swampy tract" of forest in northwestern Monroe County, expanding Beanblossom Bottoms Nature Preserve. The new section is home to state-endangered species, including Indiana bat, Kirtland's snake and rare orchids.

**Is it hot out here?** On the Indiana page of the summer, 2018, *Nature Conservancy Magazine*, John Shuey, Indiana TNC's director of conservation science, forecasts that climate change will bring our state hotter, wetter, stormier weather in decades to come. "The increase in precipitation," he says, "will be primarily during winter and early spring ... That translates into three perceived threats for our natural areas: increased drought stress, ... potentially increased fire frequency ... and increased severe weather damage from flash flooding and blow downs."

**Speed demon:** A May 23 article in the *Indianapolis Star* entitled "Indiana confirms presence of invasive 'mile-a-minute' vine," quotes our own Ellen Jacquart about the discovery of this invasive (*Persicaria perfoliata*) in Monroe County last fall, the farthest west that it has been recorded by the Early Detection & Distribution Mapping System. She says this Asian vine with triangular leaves, barbs, white flowers and dark blue fruits can grow six inches a day and has no co-evolved insect predators or herbivores here to slow it down. Ellen is INPAWS' invasive education chair.

**A dam better idea:** The *Herald Bulletin* reported in its May 18 article, "Environmental group, developer plan Indiana trailhead," that Hoosier Environmental Council (HEC) and Sandor Development, which owns River Ridge Plaza in Anderson, are collaborating on a proposed Mounds Greenway Trailhead District, in hopes of spurring the city's retail corridor while enhancing the White River waterway. A loop trail and improved canoe launch are planned; a playground may be added later. A previous proposal to create a \$450 million reservoir by damming the river failed to gain the support of officials in some affected towns. 🌿

# INPAWS on Facebook: What's new?

## By Ellen Jacquart

While in the “real world” INPAWS has just over 1,000 paid members, INPAWS also has both a Page and a Group on Facebook that are used for outreach and education to a broader audience.

New this year is a “Native Plant of the Week” post that provides an educational message on native plants consistently every week. With the help of Will Drews, Michael Huft, Martha Bishop Ferguson, Chris Neggers and Keith Board, each Monday a native plant is featured in a post on both the INPAWS Facebook Page and Group, with pictures and information about the species’ ecology, use in landscaping, medicinal uses or other interesting facts. These posts have been well received and shared hundreds of times.

What’s the difference between a Page and a Group?

A Facebook Page is like a business profile where INPAWS controls the message and can advertise our mission with posts about native plants, upcoming events or educational messages. Our Facebook Page currently has 2,600 “likes,” a number which has increased over 30% in the last six months.

A Facebook Group is a place for like-minded people to discuss topics of mutual interest. The INPAWS Facebook Group, established several years ago by Laura Hohman, now has over 11,300 members. During the busy season (when plants are growing), there are dozens of posts by members every day. Those posts are often pictures with the question “What is this plant?” but there are also spectacular photos of native plants and native gardens, information about where to buy natives, and more.

There are challenges to administering this large group, particularly because most of these “online members” are not actual members of INPAWS and are not familiar with its mission. To keep the conversation focused on native plants, we have nine administrators – Ellen Jacquart, Velda Miller, Reni Winter-Evans, Wendy Ford, Cathy Meyer, Amy

Thompson, Nathanael Pilla, Nicole Kintzele Messacar and Laura Hohman.

Join us on Facebook! “Like” our Facebook Page at [www.facebook.com/INPAWS](http://www.facebook.com/INPAWS) to follow our posts, and join the INPAWS Facebook Group at [www.facebook.com/groups/105273756180332](http://www.facebook.com/groups/105273756180332) to be part of the discussions.

*Ellen Jacquart is a member of INPAWS South Central Chapter and chair of INPAWS’ Grow Indiana Natives program.*

**INPAWS  
at work**

“One of the first and most leading principles on which the commonwealth and the laws are consecrated, is lest the temporary possessors and life-renters in it, unmindful of what they have received from their ancestors, or of what is due to their posterity, should act as if they were the entire masters; that they should not think it amongst their rights to cut off the entail, or commit waste on the inheritance, by destroying at their pleasure the whole original fabric of their society; hazarding to leave to those who come after them, a ruin instead of an habitation ... No one generation could link with the other. Men would become little better than the flies of summer.”

*Edmund Burke (1729-1797)*

# @inpaws.org



## Mission

To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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## Submissions

All are invited to submit photos, articles, news and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view. Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org. Submission deadlines for specific issues are: Spring – Jan. 22 for April 1 mailing; Summer – April 22 for July 1 mailing; Fall – July 22 for Oct. 1 mailing; Winter – Oct. 22 for Jan. 1 mailing

## Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public at inpaws.org.

## Share

Please direct information of interest to webmaster@inpaws.org.

## President's message

Oct. 23-25

## Natural Areas Conference

### By Michael Homoya

I consider INPAWS to be one of the most important nature organizations in the state. It is our charge to speak on behalf of plants (and animals, too!) native to the state of Indiana, and we have worked hard to do so. It's no small challenge, as the populace is woefully unaware of our native flora and its significance. I've heard this called "plant blindness." One reason is the increasing de-emphasis of plants in biology curricula at all levels of our educational system. Animals rule, but even they have been mostly reduced to study at the molecular level. However, successes are occurring to reverse the trend. And on the local level, much of it is because of our organization.

Take for example the recent preliminary approval by the Indiana Natural Resources Commission (NRC) of the rule to ban the sale, trade or transport of various highly invasive plants. We supported approval of this rule and several INPAWS members attended the commission meeting. Kudos to our vice-president Ellen Jacquart for speaking on behalf of INPAWS. Passage of the terrestrial plant rule will be a major step towards reducing the impact of these species on the environment. Thanks to all who helped us get this far and to the NRC members. (See "Two new preserves and progress on plant rule" on page 11 of this issue.)

At the end of this year my term as president will conclude. While it has been an honor to serve you, I will not be seeking a second term. Even though I will no longer be at the helm, I still plan to be very involved. One project that I wish to see developed is one that will train and certify "ambassadors" for native plants. Graduates of such a program would educate the public about the importance of native plants and natural areas and the harm done to them by exotic plant and animal pests and diseases. Hopefully this program will be implemented in the upcoming year.

I wish to thank each of you for your support these past two years and for your work to benefit Indiana's native flora. May our efforts continue to prosper. 🌿

INPAWS is one of the sponsors of the annual conference of the Natural Areas Association (NAA) to be held Oct. 23-25 at Indiana University, Bloomington. Most conference events will take place in the Indiana Memorial Union complex on the IU campus.

NAA is focused on providing access to cutting-edge information, emerging management techniques and science-based practices for natural areas practitioners. The conference features symposia on topics such as conserving and managing karst systems, protecting pollinators in natural areas management, and collaborative approaches to conservation.

Sessions will be presented on land management in light of climate change, fire ecology, genetic diversity and biodiversity, invasive species, restoration ecology, working landscapes conservation, urban and wildland interface, endangered species conservation, monitoring species populations, communicating the importance of conservation, and the role of the humanities in conservation.

Social events will include an NAA awards dinner and reception and field workshops to the "Hills of Gold" and Indiana's karst caves and landscapes, with emphases on working woodlands, landscape-level effects of forest management and creating bat habitat. There will be programs for students and young professionals, including a student-mentor networking lunch, "Keys to Conservation Careers" sessions and a student poster/presentation competition.

Speakers will include former director of the National Park Service Jonathan Jarvis and Dr. Gary E. Machlis, co-authors of *The Future of Conservation: A Chart for Rough Water*. Scott Russell Sanders, award-winning author of *A Conservationist Manifesto* and *Stone Country: Then & Now*, is the keynote speaker.

#### NAA member    non-member

|                      |       |       |
|----------------------|-------|-------|
| Full registration    | \$500 | \$550 |
| Student (full)       | \$290 | \$330 |
| One-day registration | \$290 | \$330 |

To register online, go to [www.naturalareas.org/conference.php](http://www.naturalareas.org/conference.php). On-site registration is possible for an additional \$30 fee. 🌿





# Chapter news

## INPAWS at work



### Central

Central Chapter members enjoyed the flowers of the season at various events throughout central Indiana. In June, Ben Hess (INPAWS) and Steve Clements (Indianapolis Museum of Art) led a hike on the IMA's Newfields campus. Ben and Steve provided wonderful plant and site knowledge to those who attended.

Carol Ford opened her Plainfield garden for a pop-up tour in early July, showing her garden dominated by native plants, including royal catchfly (*Silene regia*). Members also visited Avon Outdoor Learning Center. The native garden at the center, a recipient of an INPAWS grant, has been maintained by volunteers since its planting in 2000. (See "10,000 doses of vitamin N" on page 2 of this issue.)

A mid-July picnic for members and their families at Southeastern Parkway included a hike led by Ben Hess. Anika Williams from the Irvington Branch of Indianapolis Public Library shared news about the library's new seed library; her talk was followed by a discussion on native plant issues.

Other events included an August presentation by Aaron Stump on creating an Indiana Wildlife Federation Certified Wildlife Habitat and a September talk on bees and pollination by Doug Rohde and Deborah Rood.

### Northeast

Northeast Chapter held a native plant swap in June at Little River Wetlands Project (LRWP). In July, they returned to LRWP to conduct another hands-on native plant propagation seminar. As part of the seminar, stewardship co-chair Kate Sanders took participants on a walk to take cuttings of elderberry, dogwood and buttonbush, then showed the proper way to trim and plant the cuttings. The event was a follow-up to the seed-planting seminar led by Betsy Yankowiak and Kate in February.

In August the chapter held a native plant garden tour in southwest Allen County, visiting a mesic meadow, a woodland and an INPAWS-certified native pollinator garden. One of the sites, Southwest Conservation Club, had received a grant from INPAWS. After the annual picnic in September in Leo-

Cedarville, the group toured a member's prairie restoration project and an adjacent bird sanctuary.

The chapter's annual meeting in October will be at Forks of the Wabash in Huntington. Ellen Jacquart will present a program on invasive plants and members will hold their biennial election of officers.

### South Central

On April 21, SCINPAWS members enjoyed a combined hike with Master Gardeners in Owen County at Fish Creek Preserve. On May 13, the chapter's Florathon team hiked at McCormick's Creek State Park, identifying 150 species of blooming plants. A June 8 work day at The Nature Conservancy's (TNC) Rabbit Hash Trail in Harrison County was followed by a glade tour led by Dawn Slack, TNC's southern Indiana land steward.

On June 16, members staffed an information table at SCINPAWS's seventh annual SNAYL (Sustaining Nature And Your Land) Day at the Bloomington farmers' market and adjacent city hall. The event teaches landowners how to make their property as diverse and healthy as possible by controlling invasive species and planting natives. Hundreds of people stopped by the table to learn about invasive plants through demonstrations and exhibits. The most popular part of SNAYL Day was "The Weed Lab," a display of potted invasive plants and control tools staffed by the area's invasive experts. People were encouraged to "Bring Us Your Weeds!" and dozens brought plant samples for identification and control advice.

Ellen Jacquart led members on a Sept. 1 hike at Cedar Bluff Nature Preserve near Bloomington.

### Southwest

Prohibiting the retail sale of invasive plants was the topic of a presentation by Ellen Jacquart, former director of northern Indiana stewardship for The Nature Conservancy and current vice-president of INPAWS, at SWINPAWS' July 21 meeting at Wesselman Woods Nature Center in Vanderburgh County.

The chapter held its 2<sup>nd</sup> annual plant sale Sept. 8 at the Southwest Indiana Master

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Gardeners Display Garden in Evansville to raise money for public education about native plants and to provide native plant stock to the public. Customers were treated to a large selection of over 1,500 plants, including bare-root spring ephemerals.

On Sept. 15, Dave Dobson, plant manager for Combs Landscaping, addressed members on using native plants as substitutes for exotic ornamentals in home landscapes. Such plants, he said, can provide food and shelter to native insects and wildlife, so the results are both beneficial and beautiful.

*Upcoming:* On Nov. 17 at 9:30 a.m. at Wesselman Woods Nature Center, Paul Bouseman will discuss methods for propagating woody plant species from cuttings. He is botanical curator at Mesker Park Zoo and Botanical Garden in Evansville.

### **North**

On a rainy June day, eight brave souls joined botanist Nathanael Pilla at Red Mill County Park, LaPorte County, where he highlighted the restored headwaters of the east arm of Little Calumet River. Plants discussed were common dodder, pond lilies, duckweed, skunk cabbage, coontail, wide-leaved ladies' tresses and bog twayblade. And what's a


wetland without a northern water snake and a snapping turtle?

In July, North Chapter president Jan Hunter spoke on invasive plants to 26 Master Naturalists at Wellfield Botanic Garden, Elkhart, and chapter members staffed booths at Envirofest at Wellfield Botanical Gardens and at the Elkhart County 4-H Fair "Green Day."

On August 26 members headed to Little Calumet River Prairie and Wetlands Preserve in Lake County. Spencer Cortwright, Indiana University Northwest professor of ecology, shared the restoration work he has done on this prairie.

The chapter's second annual late-summer plant sale was Sept. 8 at South Bend/Elkhart Audubon Wildlife Sanctuary in Mishawaka.

DNR regional ecologist Tom Post led a Sept. 12 hike at Hoosier Prairie State Nature Preserve in Lake County. Hoosier Prairie is a large remnant of prairie that preserves the topographic and biotic diversity of the sand plains north of the Valparaiso Moraine.

On Sept. 15 DNR regional ecologist Derek Nimitz led a hike at McCloskey's Burr Oak Savanna Nature Preserve in Lake County. This was an amazing opportunity to visit a rare mesic savanna habitat which once covered thousands of acres across Indiana. 

## **INPAWS public policy statements – when and how**

### **By Tom Hohman**

As a 501(c)(3) non-profit corporation, the mission of INPAWS is primarily one of public education. Our focus is not political. However, at times it is very much in keeping with our mission to take a stand on a public issue, and we are allowed to do so (within limits) by IRS regulations.

INPAWS has recently undergone an organizational change to bring it into compliance with legal requirements for a 501(c)(3). That change has involved the establishment of a Board, which took on some of the legal duties and responsibilities of the INPAWS Council. However, the Council was retained as the main entity for control of INPAWS functions and programs. During this transition there was, and probably still is, some confusion on who does what.

One area of uncertainty involved when and how INPAWS takes a position on a public issue. The INPAWS Board recently developed and approved a policy to answer that question.

For INPAWS to take an official position on a public issue, two things have to happen:

First, the INPAWS Council must approve the position by a 2/3 vote.

Second, the INPAWS Board must also approve the position by a 2/3 vote.

While this may seem like a cumbersome set of requirements for INPAWS to take a public position, it is intentional. Making it a two-step process ensures that INPAWS leadership does not act impulsively. It ensures that there is ample time to discuss the proposed position statement and get input from all parts

*Policy – continued on page 10*

## IN Natural Heritage Data Center celebrates 40 years

*(DNR Division of Nature Preserves press release)*

A state program that inventories Indiana's unique natural areas, including locations of rare and endangered plants and animals, fragile habitats, and uncommon ecological and geological features, celebrates its 40<sup>th</sup> anniversary this year.

The Indiana Natural Heritage Data Center (INHDC), part of the DNR Division of Nature Preserves, began on May 19, 1978, when then-Governor Otis Bowen signed it into existence. At the time, it was one of just 12 such programs nationwide.

INHDC formed as a collaboration between the State, The Nature Conservancy and the Indiana Energy Association to provide an objective, scientific basis for making conservation decisions about unique environmental resources.

sensitive natural areas.

Current INHDC projects include surveys of natural areas in Hoosier National Forest; surveys for bees, stoneflies and beetles; monitoring of state and federally listed species; and participating with partners in restoration efforts that target several species and natural areas.

INHDC is part of a network of heritage programs in all 50 states, all Canadian provinces and many Latin American countries. The network is coordinated by NatureServe, a non-profit organization.



### *Policy – from page 9*

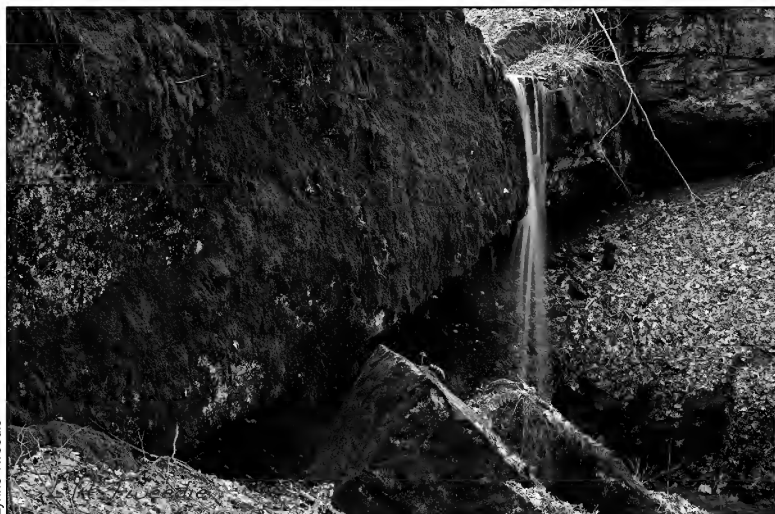
of INPAWS. This does not mean that we can't act quickly, because email voting allows for timely votes if needed to meet a deadline.

The other thing that may at first seem odd is the requirement for a 2/3 vote, rather than a simple majority. This is intentional. While INPAWS taking a position on an issue does not mean that all members of INPAWS will agree with it, it should certainly mean that the vast majority of INPAWS members do. The requirement for a 2/3 vote helps ensure this. If only a bare majority of either the Council or Board supports a proposed position, INPAWS should not (and will not) take a public position on it.

The one thing that is not stated in the policy is when and how INPAWS even considers taking a position on a public issue. The Council is composed of INPAWS Board members, local chapter representatives and committee chairs. Any INPAWS member, even one who is not active on either the state or local level, can find out on our web site who the Council members are. Any member who feels that INPAWS should take an official stand on a public issue should contact someone on the Council and ask them to bring it up for consideration at the next meeting. They are also welcome to attend that meeting to help make their case on why INPAWS should take a position.

While it is sometimes difficult for a statewide organization to ensure that all members have their voices heard and are truly part of the organization, we are doing our best to make that a reality.

*Tom Hohman is an INPAWS board member and past president.*



*Water tumbles into a lush ravine at Fern Cliff Nature Preserve in Putnam County. The preserve features steep forested sandstone cliffs and a profusion of ferns and bryophytes.*

To date, INHDC has recorded the locations of 18,000+ occurrences of rare or endangered species, 1,000+ occurrences of high-quality natural communities, and 800+ significant natural areas. These include records for 80 globally critically imperiled species. This information has resulted in many places receiving protection through Indiana's system of nature preserves, which encompasses 284 properties and more than 53,000 acres.

Companies and consultants also use INHDC data when planning projects in order to avoid sensitive and rare species and sites, and the data is an essential component of DNR's environmental review process to avoid affecting

Lynne Tweedle

## Two new preserves and progress on plant rule

(DNR news release)

**The Indiana Natural Resources Commission (NRC) has approved two new nature preserves.** The July 17 action increases to 287 the number of state-designated sites protected by the Nature Preserves Act. The new preserves are Dewey Hickman Nature Preserve in Harrison County and Mary Gray Nature Preserve in Fayette County.

The Dewey Hickman preserve comprises 125 acres southwest of Corydon. It is named as a memorial to the superintendent of the Civilian Conservation Corps (CCC) camp that was located where O'Bannon State Park is now. Owned and managed by The Nature Conservancy, this preserve in the Shawnee Hills Natural Region is home to three bird species of state special concern, the hooded warbler, sharp-shinned hawk and red-shouldered hawk, as well as the state-endangered cerulean warbler. Noteworthy plant species include the state-rare Eastern bloodleaf.

The Mary Gray preserve southwest of Connersville is a 37.99-acre portion of the Mary Gray Bird Sanctuary. The site is included in Alton Lindsey's *Natural Areas in Indiana*. Research is being conducted at the preserve by bird banding during the spring and fall migrations of the northern saw-whet owl and ruby-throated hummingbird. A turtle population research project has been in progress since 1985. Owned and managed by the Indiana Audubon Society, the preserve consists of a high-quality mesic upland forest with a showy spring wildflower display. The forest contains many species that are area-sensitive, forest-interior plants, and animals that depend upon large, unfragmented forest ecosystems.


**In other action, the NRC granted preliminary adoption of a new rule designed to remove 44 invasive plants from trade inside Indiana.** The decision only starts the deliberative rules process. It does not put a new rule into effect.

Invasive species in Indiana regularly move into the forest and restrict the ability of trees to regenerate because invasives use essential nutrients and block sunlight from native species that regenerate more slowly.

Indiana land managers, private and public, currently spend an estimated \$8.6 million managing

invasive plants every year. The goal of removing these invasive species from trade is to reduce the number of such plants escaping into the wilderness, thereby reducing the amount of state and federal funding required to control them.

DNR has determined that 22 of the 44 plants identified can be found in trade in Indiana now, but only four are sold with any regularity. To decrease potential fiscal impact of the rule on small businesses, DNR would make allowance for an additional year from the effective date of the rule to sell affected stock before issuing penalties. The proposal would also allow members of the public to report evidence of terrestrial invasive species to DNR.


Next, the NRC will provide an opportunity for public comment in writing or at two public hearings. The NRC is an autonomous board that addresses topics pertaining to the DNR. More details on these actions are available at [nrc.IN.gov/2350.htm](http://nrc.IN.gov/2350.htm) under "July Agenda." 

### Plant rule: what you can do By Dawn Slack

The Indiana Natural Resource Commission (NRC) has granted preliminary adoption of the terrestrial plant rule, and thus begins the rule-making process.

A "Notice of Intent to Adopt a Rule to Publisher" will be submitted to the Legislative Services Agency (LSA) and then to the Office of Management and Budget (OMB). LSA will also publish a "Notice of Intent to Adopt a Rule" in the Indiana Register. A "Notice of Public Hearing" will be published after a review of documents by OMB and the sponsoring entity (DNR Division of Entomology and Plant Pathology), and it is during this phase of the process that the public may comment on the proposed rule.

I will send an email about the comment period to the Indiana Plant Advisory Listserv (IPAC) and post a blog on the IISC website ([Indianainvasivespecies.org](http://Indianainvasivespecies.org)). If you have not been receiving these emails and wish to be on the list, email me at [Dawn.slack@tnc.org](mailto:Dawn.slack@tnc.org) and request to be added to the IPAC listserv. Ellen Jacquart has posted the information on INPAWS' Facebook page.

Stay tuned! 



Mikes Birds - Wikimedia

*The hooded warbler is one of the species of state special concern occupying the newly protected Dewey Hickman Nature Preserve in Harrison County.*

## INPAWS history, part III:

# Becoming an environmental force

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**By Ruth Ann Ingraham**

*This is the final article in a series that looks back at some of the highlights of the 25 years since the inception of INPAWS.*

### Conferences

Annual conferences bring us together, as Tom Hohman can attest, having chaired several. It was Karen Bird's quick thinking that engaged Dr. Doug Tallamy, entomologist with the University of Delaware, as keynote speaker in 2008. She first heard of him through an advertising email touting his book *Bringing Nature Home*. "He was available the date of our conference and his fee was within our budget," Bird says. "The rest is history." Attendance that year exceeded the Garrison Conference Center's capacity at Fort Benjamin Harrison State Park, signaling a need for a larger venue and earlier advance planning.

Hohman recalls, "Conferences in succeeding years continued to enjoy success, with crowds of over 200. The 2014 conference in Bloomington, the first time outside of Indianapolis in a number of years, saw attendance swell to 300. Greater emphasis was placed on staffed displays for conservation-oriented non-profit organizations, and sponsors received greater recognition. Many joined INPAWS and returned in succeeding years."

Attendees have been inspired by renowned educators and authors in addition to Tallamy: Stephen Apfelbaum, Robert Breunig, Lincoln Brower, Carole Brown, Frederick Case, Jr., Neil Diboll, Tracy DiSabato-Aust, Rick Darke, Ken Druse, Jennifer Hopwood, Douglas Ladd, Donald Leopold, Richard Lighty, Jim Locklear, Jim McCormac, Darrel Morrison, Reed Noss, Brett Rappaport, Peter Raven, Carole Summers, Floyd Swink, Stanley Temple, Andy Wasowski, Gerald Wilhelm and Jim Wilson.

Speakers have also included members: John Bacone, Jeff and Sandy Belth, Dave Benson, Gene Bush, Lee Casebere, Cheryl Coons, Rebecca Dolan, David Gorden, Carolyn Harstad, Alice Heikens, Mike Homoya, Marion Jackson, Ellen Jacquart, Bill McKnight, Paul Rothrock, Tom Swinford,

Lenore Tedesco, Kevin Tungesvick, Sally Weeks and Kay Yatskievych.

### Chapters

Written history names Oakhurst in Muncie as INPAWS' first chapter. But the official first, complete with by-laws and constitution, was West Central Chapter, spearheaded in 1999 by Chris Brewster. Its president Carolyn Bryson (2000-2001) promoted local chapter development, believing every member could be involved in projects such as plant rescues and invasive species removal. In 2001, East Central and Northwest chapters formed. Though short-lived, they reemerged later in new configurations. Two others emerged in 2003, Central, headed by Betsy Wilson, and South Central, led by Steve Dunbar. From 2004 to 2006, each county's members were assigned to one of four huge chapters so no member was left out. Even so, INPAWS president Tom Hohman (2010-2011) lamented that membership was heavily weighted across the State's mid-section. Davie Sue Wallace had arranged for Dr. Doug Tallamy, University of Delaware entomologist, to speak in Evansville, so Tom drove down to promote the formation of a new chapter there. The result was Southwest Chapter. That success under his belt, Tom brought Tallamy back to speak in Indiana's north. Their collaboration resulted in another chapter in 2011, Northwest (now North), led by Steve Sass. In 2016, Northeast emerged, spearheaded by Martha Ferguson.

### Newsletter/Journal

Our quarterly publication has evolved from the very first newsletter of eight pages in 1994 to a full-color journal of 16 to 20 pages. A new development this year gives credence to its growth, and to say that it greatly expands our reach is an understatement. The 2018 summer issue of *INPAWS Journal* revealed that the entire collection of our quarterly publications is to be included in Harvard University's Biodiversity Heritage Library (BHL), part of the Encyclopedia of Life Project. Our journals will soon be accessible

*Becoming* – continued at right

## Tribute:

# Carolyn Harstad, 1936 - 2018

Carolyn Harstad, who helped found INPAWS in 1993, died on July 24. A native of Minnesota, she was president of INPAWS from 1996 to 1998 and editor of the newsletter (with Art Hopkins) from 1999 to 2003.

INPAWS co-founder and friend Ruth Ann Ingraham called Carolyn "creative and energetic and brilliant. She inspired us all."

While serving as INPAWS president, Carolyn wrote *Go Native!*, her book on landscaping with native plants. Davie Sue Wallace, a past vice-president of INPAWS, recalls that in the book's preface Carolyn referred to an article in the *American Hosta Journal* entitled "Harstad Confesses to Having a Wild Passion." The interviewer called her a "Waldfee," German for "wood-sprite."

"This was the perfect description of Carolyn," said Davie Sue. "She had a 'wild passion' for native plants. Her enthusiasm was contagious. I joined INPAWS after meeting her at a conference. She was always encouraging and supportive of my work with INPAWS and other native plant projects. It is a sad loss for everyone in the plant world. I like to think she is in her woodland garden now, as a free Waldfee."

In the same preface, the author called herself "an ordinary, self-taught gardener." It was she who, in 1993, suggested that "wildflower" be made part of the organization's name "to encourage [such] gardeners, who were eager to learn, but fearful of being deemed 'uneducated.'"

Carolyn wrote two other books on native plants, *Got Sun?* and *Got Shade?* She also helped found the Indianapolis Hosta Society in 1986. She was a Master Gardener, a nature photographer and lecturer, and a member of the Garden Writers Association of America. She spoke on gardening with natives at INPAWS' 2013 annual conference.

"Energetic" was also the word Bill McKnight used to describe Carolyn. "In fact," he said, "she was downright feisty when she helped me with the state flower project in the 1990s. She was involved with INPAWS before it was an official organization, and we would not be what we are today without Carolyn's leadership and that of her wonderful husband Peter." (Peter Harstad died June 7, 2017.)



Ruth Ann Ingraham

Carolyn and her husband Peter Harstad (1935–2017) posed in 2003 with samples of the INPAWS Journal edited by Carolyn.

## Becoming an Environmental force – from left

in their entirety to readers worldwide. As of this writing, twelve volumes (years) have been digitized and are searchable and downloadable. This is a tribute to the outstanding work and journalistic excellence of our content and layout editors through the years. They are: Chris Carlson, Dan Anderson, Anne Wilson, Carolyn Harstad, Margo Jaqua, Art Hopkins, Bobbi Diehl, Wendy Ford, Nancy Hill, Kit Newkirk, Patricia Cornwell, and journal "team leader" as of 2015, Scott Namestnik.

I have said that our quarterly journal is among the best of North America's native plant society publications. No bias, of course, but inclusion in the BHL affirms the claim. Kudos to those who cajoled authors, edited articles and created layouts. Kudos to the dozens of writers who write for our edification and pleasure.

### Volunteers

Yes, INPAWS is now a major environmental force in the state, focusing on native plants, from humble sedges to towering trees, and the life they support. How have we achieved so much? I attribute our success to the corps of volunteers who handle nearly 100% of our activities. We are not alone. Support for INPAWS and other organizations with similar preservation goals – land trusts, The Nature Conservancy and Indiana Wildlife Federation, to name a few – has expanded remarkably since the early 1990s.

I think back to April, 1993, when a diverse group of folks, from home gardeners to academics, came together. That diversity continues to make INPAWS the vital organization it is today.

*Ruth Ann Ingraham is a co-founder and official historian of INPAWS.*

# Succession – from page 16

Typically, annuals are seen in the first stages of secondary succession. These are adapted to harsh conditions – intense sun, fluctuating soil moisture and temperature or strong winds. Since Europeans migrated to North America, these early successional annuals are now a mix of natives such as ragweed (*Ambrosia* spp.), horseweed (*Conyza canadensis*) and daisy fleabane (*Erigeron annuus*) and exotics such as green amaranth (*Amaranthus retroflexus*), lamb's quarter (*Chenopodium album*), common chickweed (*Stellaria media*) and various mustards (*Brassica*, *Lepidium*, *Capsella* spp.). Kricher (1988) and Squiers (1997) provide lists of succession species.

Annuals provide an environment where herbaceous biennials and short-lived perennials can establish. These include natives such as goldenrods (*Solidago* spp.), New England aster (*Symphyotrichum novae-angliae*) and black-eyed Susan (*Rudbeckia hirta*). Shrubs, trees and vines may appear next, but they can take 10+ years to predominate. Initially, the landscape will be patchy, with open areas of herbaceous plants and other areas with dense woody vegetation, such as eastern red cedar (*Juniperus virginiana*), black cherry (*Prunus serotina*), sweetgum (*Liquidambar styraciflua*) and tulip tree (*Liriodendron tulipifera*). Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*) may grow up tree trunks. Shadbush, also called serviceberry (*Amelanchier* spp.), multiflora rose (*Rosa multiflora*), staghorn sumac (*Rhus typhina*), dogwood (*Cornus* spp.) and hawthorn (*Crataegus* spp.) may be found in the shrub layer. Over decades, assuming there is a nearby seed source and natural disturbance of some kind, oak and hickory will come to dominate the landscape.

Not only climate, but slope, aspect, soil type and soil moisture influence the climax mix of species (Weeks et al., 2005). Oak and hickory can be abundant on level areas, but tend to be found on dry south-facing slopes, whereas beech and maple are found on north-facing, more mesic (moderately moist) sites. Lindsey (1997) lists tree species characteristic of sites going from wet to dry.

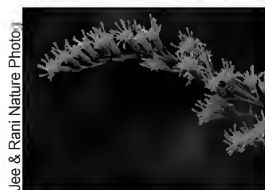
How do successional species enter a denuded landscape? Seeds of many species can persist in

soil for years. Staggered seed dormancy means some will not germinate for many years (Kricher, 1988). Wind, water and animals may carry seeds to a bare landscape. Where present day glaciers are retreating, vegetation may be found near their edges (Melhorn, 1997). Presumably this also occurred as glaciers receded from Indiana about 13,000 years ago. As the climate became warmer, broadleaf trees replaced conifers.

Native Americans occupied North America for centuries. Although they did not alter the natural landscape nearly as much as European settlers, they did use fire in both grasslands and forests for agriculture and to drive or attract game (Barbour et al., 1999; Parker, 1997). In Indiana, such fires probably contributed to the maintenance of oak-hickory forests. With fire suppression in the 20th century, some of these woodlands are converting to beech and maple, species that can establish in shade. Cameron Clark, director of the Indiana DNR, points out that most of Indiana's current forest is second (or third or fourth) growth and has resulted from secondary succession with both natural and human disturbances contributing to the species that now occupy the land (Clark, 2018).

Humans have interrupted natural forest succession in many ways, including introduction of non-native species, habitat fragmentation, fire suppression, drainage and, more recently, climate change.

In some cases, humans have attempted to bypass natural succession by planting climax species. A large-scale example is the Tillamook Burn – 350,000 acres in Oregon's Coast Range that sustained devastating fires from 1933 to 1951. Douglas fir (*Pseudotsuga menziesii*) is the climax species in this area. Virtually every tree was killed. Secondary succession might have taken centuries. To speed things up, millions of seedlings were planted from the 1950s to the 1970s (a few by me, as a Boy Scout). Now there are dense stands of Douglas fir where only a few decades ago there were hundreds of square miles of scattered snags and brush. On a smaller, more local scale, native trees are being planted in Newfields' Virginia B. Fairbanks Art and Nature Park, Indianapolis, to speed up secondary succession in what was farm bottomland at the turn of the 20th century. 🌱



Early successional species include native annuals such as daisy fleabane (top), ragweed and goldenrod.



# Howard Michaud, Hoosier conservationist

## By Terri Gorney

Howard Michaud was a 20<sup>th</sup> century Indiana conservationist. He did much to promote and educate about the natural beauty of the state, yet his name is little known.

At the age of 29, Michaud, a native of Berne, was the first chief interpreter for Indiana State Parks. It was a summer position, based at McCormick's Creek State Park. A 1937 article in the *Indianapolis Star* stated that a hike with Howard was a "treasured experience."

By profession, he was a biology teacher, first at Central High School, then North Side High School, in Fort Wayne. In 1941, he wrote an article entitled "Importance of Field Work for the High School Biology Teacher" for *The American Biology Teacher* journal.

In 1946, when Michaud became a professor of conservation and forestry at Purdue University, he made West Lafayette his home. There, he co-authored *Wildlife Conservation in Indiana*. He and his wife Ruth created a weekend camp

program of nature hikes and biology lessons for the city's fifth-grade students.

In the 1930s, Michaud served on the boards of the Indiana Audubon Society and the Stockbridge Audubon Society, where he helped with the annual Christmas Bird Count in Allen County. He was a board member of the Indiana Academy of Sciences and was its president in 1963. He served on the West Lafayette park board for 23 years.

The June, 1959, issue of *Outdoor Indiana* featured an article on the state's workshops on interpretive programs for outdoor education. People from 11 states, the National Park Service and two Canadian provinces attended.

One of the presenters was Howard Michaud.

Over his teaching career, Michaud influenced many students. They include Marion T. Jackson, professor emeritus at Indiana State University and author of *The Natural Heritage of Indiana* and *101 Trees of Indiana*, and Erik Neumann, former director of the US National Arboretum in Washington, DC, and author of several books on plants.

In 1991, Governor Evan Bayh named Michaud a "Sagamore of the Wabash," a fitting honor since he grew up fishing in the Wabash River. He later received the Theodore Roosevelt Award from the North American Association for Environmental Education (NAAEE).

In his nineties, Michaud wrote, "I think a lot of kids today have lost that feeling for the out-of-doors, because all they see is city streets."

After his death in 1998 at age 95, the Indiana NAAEE chapter named an award in his honor.

## Naturalist profile



Early state park interpreters pose for a group photo in 1941. From left: head interpreter Max Forsythe, Edna Banta, Howard Michaud, [first name unknown] Mills, Howard Weaver

## Succession – from left

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Gregory Shaner is a member of West Central Chapter and secretary of INPAWS' board of directors.

Terri Gorney is a member of INPAWS Northeast Chapter and vice-president of Friends of the Limberlost.



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*Studying the Indiana dunes gave Henry Cowles an insight that led to the concept of ecological succession.*

### **By Gregory Shaner**

Ecological succession is a concept formalized over 100 years ago by Henry C. Cowles, a professor at the University of Chicago. It refers to changes in species composition on a landscape over time (Squiers, 1997).

The insight came to Cowles during his studies of vegetation in the Indiana dunes. He realized that the spatial pattern in plant composition moving inland from the shore was also a temporal pattern. The youngest communities were near the shore, the older ones inland. Bare sand is an inhospitable environment, but as initial colonizing species such as marram grass (*Ammophila breviligulata*) stabilized the shifting sands, other herbaceous species and shrubs could gain a foothold. In time, trees such as cottonwood (*Populus deltoides*), jack pine (*Pinus banksiana*) and white pine (*P. strobus*) replaced these species. Later, oak (*Quercus* spp.) and hickory (*Carya* spp.) would replace these early tree species, and they in turn would eventually give way to beech (*Fagus grandifolia*) and maple (*Acer* spp.).

Another important early figure in vegetation dynamics was Frederick Clements of Carnegie Institution and later the University of Nebraska. Both Cowles and Clements believed climate was the ultimate controller of the species composition of the landscape, and that succession would terminate in a "climax" community, an assemblage of species that would predominate broad areas indefinitely – in the absence of major disturbance.

**Primary succession** occurs on land previously devoid of vegetation, such as bare rock exposed when a glacier recedes, or new rock laid down after volcanic eruption. Primary succession can be a long-term affair, because it requires soil building. **Secondary succession** occurs when the vegetation on a site is removed by wildfire, hurricanes, tornadoes or human activity, but the soil remains. Secondary succession is on a much shorter timetable, measured in decades.

*Succession – continued on page 14*



Volume 25, Number 4

# inps journal

Indiana Native Plant Society

Winter 2018-19

## We have a new name!

By Michael Homoya

Following a unanimous vote last fall by the INPAWS board and council, the organization known as the Indiana Native Plant and Wildflower Society has become the Indiana

Native Plant Society.

We're still the same organization, with the same mission and goals, and are using the same words, just dropping "and Wildflower."

I provided INPAWS members reasons for the change last year via the journal and web page blog. If you're interested, I refer you to

those, especially the June 9, 2018, blog titled "Considerations and Reasons for Renaming INPAWS." I asked the membership for thoughts regarding the proposal and, if supportive of such a move, what the name should be. In addition to blog responses, I received several emails. Overwhelmingly, the response was to make a change. The most suggested name was the Indiana Native Plant Society. Thank you to everyone who provided input.

By having this new name we avoid the abbreviation that has caused some to think we're an organization about furry four-legged animals. It also gives us a naming style utilized by practically all other organizations with

a mission similar to ours. "Fill in the blank Native Plant Society" is a format used and recognized throughout the country and world.

Beginning with the changed masthead on the web page, a new web address ([indiananativeplants.org](http://indiananativeplants.org)) and the new journal name, you will see other changes as time goes on. Being good stewards, we won't discard existing printed materials bearing the INPAWS name but will continue to distribute them until the need for reprinting arises.

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Yes, it will take time to become accustomed to a new name and abbreviation. After all, we've been using INPAWS for 25 years now. Eventually the new name will become familiar to our ears. While INPS doesn't form a word, we can say either the new (and now shorter) full name, or spell out its initials, not unlike what is done to identify radio or television stations (e.g., WFYI-TV). Four letters too many to say? Because IN is an abbreviation for Indiana and can be pronounced "N", saying "N-P-S" would seem to work well, at least in casual conversation. Time will tell what works best, but whatever that might be, we will continue to strive to be the best possible advocates for our native Indiana plants.

*Michael Homoya is immediate past president of INPS.*



Michael Huft

*During the annual conference Nov. 3, Ellen Jacquart presented outgoing president Mike Homoya a thank-you for his term, a framed photo of filmy fern, a threatened species he is known to search for in the cliffs of southern Indiana.*

# Who was Thomas Say?

## Naturalist profile

### By Terri Gorney

Thomas Say could well be considered Indiana's first naturalist. He lived and worked in the Hoosier state for the last 11 years of his life, during which he published two large volumes of work. He became known as "the Father of Entomology" in the United States.

In 1824, Say discovered a previously unknown firefly, which was named in his honor. It is fitting that in 2018 "Say's firefly" (*Pyractomena angulata*), a "lightning bug" native

to Indiana, was named our state insect, bringing Say's name once more into the limelight.

Say was born into a prominent Philadelphia Quaker family in 1787. He was a self-taught naturalist from a family of distinguished naturalists. The son of Dr. Benjamin

Say, he was the great-grandson of famous botanist John Bartram and the great-nephew of William Bartram. As a youth, he spent hours in the Bartram family garden studying insects and sharing his finds with his great-uncle William.

By profession, Say was an apothecary but he became known for his studies of entomology, conchology and herpetology. His contributions to scientific journals and his descriptions of more than 1,400 new insects discovered on expeditions to Florida, Georgia, the Rocky Mountains and Mexico made him internationally known.

In 1819-20, during a Western expedition, he identified, among other species, a bird known to this day as Say's phoebe (*Sayornis saya*).

In 1823, a group of scientists set out on a Northwestern expedition to the source of the St.

Peter's River, commissioned by the government. The intended botanist was detained, so the only account of plants on this trip was from Thomas Say, who was listed as the naturalist. As the group approached Ft. Wayne, as related in an 1824 report, "The cotton-wood trees became much larger as we advanced. Mr. Say noticed the *Papilio thoas* and *ajax* [butterflies] in great number [and] fine luxuriant growth of white and black oak, beach [sic], hickory, shellbark, etc."

In the vicinity of Chicago, Say recorded nearly a dozen bird species but only two plants: "In the vegetable kingdom, the same gentleman [Say] observed that the *Gerardia* was found ... A beautiful specimen of *Cassida* was likewise seen." Later in the valley of the St. Peter River, Say added to the expedition's sparse herbarium "a beautiful specimen of the *Lilium Philadelphicum*, which was still seen flowering. ... This plant is considered by the Indians to be a specific against the bite of the rattlesnake."

Except for the "*Lilium*," it is difficult to fathom what species of flowers were actually found. *Cassida* is a beetle species, but clearly Say's "*Cassida*" was a flower. His "*Gerardia*" could have been one of the 146 species in the genus *Gerardia* or a foxglove relative that goes by the same name.

In 1826, Say arrived in New Harmony where he met Lucy Way Sistare, whom he married in 1827. While in New Harmony, he created two volumes of work: *Descriptions of the Insects of North America* and *Descriptions of the Shells of North America*.

Lucy, a fine artist and illustrator, was interested in shells and helped with his book on conchology by making the drawings for the plates and helping with their coloration. She became the first woman elected to the Academy of Natural Sciences.

Say was one of the founders of the Academy of Natural Sciences of Philadelphia. When he died at age 47 in 1834 in New Harmony, his collections and books went to the Academy.

Today, Purdue University's Thomas Say Entomological Society is dedicated to undergrads with a passion for insects.

*Terri Gorney is a member of INPS Northeast Chapter.*



Say's phoebe was named for Indiana naturalist Thomas Say, who identified the bird during an expedition in 1819-20.

HarmonyPlanetEarth

## Conference 2018:

# Speakers offer reality check, hope

**By Patricia Happel Cornwell**

Welcoming attendees to the Nov. 3 INPS conference at IUPUI, outgoing president Michael Homoya noted that 2018 was the organization's 25<sup>th</sup> year. He told a crowd of 340 native plant lovers, "We are a vibrant group of souls striving together to better the world through plants."

Homoya announced that, after a period of online input from members, the board and council have voted to change the organization's name from Indiana Native Plant and Wildflower Society to simply Indiana Native Plant Society, in keeping with the format of other such entities.

Members voted unanimously to accept a slate of four board members. Tom Hohman and Ruth Ann Ingraham have agreed to serve another two-year term. Ronnie Greenberg of Northeast Chapter and Roger Hedge of Central Chapter will replace outgoing Wendy Ford and Davie Sue Wallace.

Ingraham announced that a children's book on native plants entitled *Wake Up, Woods* will be published in 2019, aimed at those in the primary grades. (See "Birth of a Book" on page 12 of this issue.)

Barbara Homoya, chair of the inaugural Florathon fundraiser, gave awards to the teams who identified the most plants. Fifty individuals participated in 13 teams, surveyed 24 counties, identified 372 species of native plants and recruited 20 new INPS members. Their efforts raised \$4,259.25, the proceeds going to INPS's Letha's Youth Outdoors Fund. The team with the most species was the Bloomin' Stellarias led by Ellen Jacquart. (See "First Florathon a success" in our fall issue.) Next year's event will take place from April 13 to May 12.

Conference speakers were Peter Del Tredici of the Urban Planning Dept. of Massachusetts Institute of Technology; Eric Knox and Paul Rothrock of Indiana University's Deam Herbarium; Laura Rericha, wildlife biologist for the Forest Preserve District of Cook County, IL, and co-author with Gerould Wilhelm of the 2017 *Flora of the Chicago Region*; Wilhelm, with the Conservation Design Forum; and Jesse Kharbanda of the Hoosier Environmental Council.

Del Tredici gave two presentations, speaking first on urban ecosystems and later on his research on hemlock trees. In "Urban Nature/ Human Nature," he stated that the vegetation of US cities is now "24 to 35% non-native species," in part because they can grow in fill soils that have replaced native soils. The speaker also described his longterm study of hemlocks (*Tsuga* spp.) and the impact of the hemlock woolly adelgid (*Adelges tsugae*) that is killing the trees.

Knox and Rothrock gave an entertaining demonstration of the uses of the Consortium of Midwest Herbaria data portal ([midwestherbaria.org](http://midwestherbaria.org)) that now contains extensive information on Indiana's native plants.

With the help of 100 undergraduate students, the pair have worked to digitize IU Deam Herbarium's 152,000 specimen records as part of the regional data bank. The site can be used to identify puzzling plants. They invited conference-goers to submit their photos of live plants.

Rericha spoke on "The Pollination Biology of Flowers and Their Symbionts," focusing on bees. She described factors that negatively impact bees such as predation, agricultural pesticide and herbicide use, and habitat loss or deterioration. "We are losing the remnants, the hedgerows and roadsides," she said. "We are sterilizing the environment."

Kharbanda encouraged attendees to actively support certain bills in the state legislature to protect the environment, since appropriations for conservation efforts are down. He outlined areas of needed reform, including eliminating air and water pollution caused by confined animal feedlots, expanding greenways to enable more foot traffic and fewer vehicle emissions, and safeguarding Indiana's forests.

Wilhelm mused on "What It Means to be Native." "In nature," he said, "there is almost nothing random going on. It is sweetly designed. This is what we've almost completely designed away from." He discussed the elements that determine whether a landscape is a true native "remnant."

Next year's conference will be Nov. 9 in Fort Wayne.

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*Patricia Happel Cornwell is co-editor of INPS Journal.*

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Michael Huff

*A crowd of 340 native plant lovers gathered at IUPUI on Nov. 3.*

# Field notes

**By Patricia Happel Cornwell**

## **Bittersweet news**

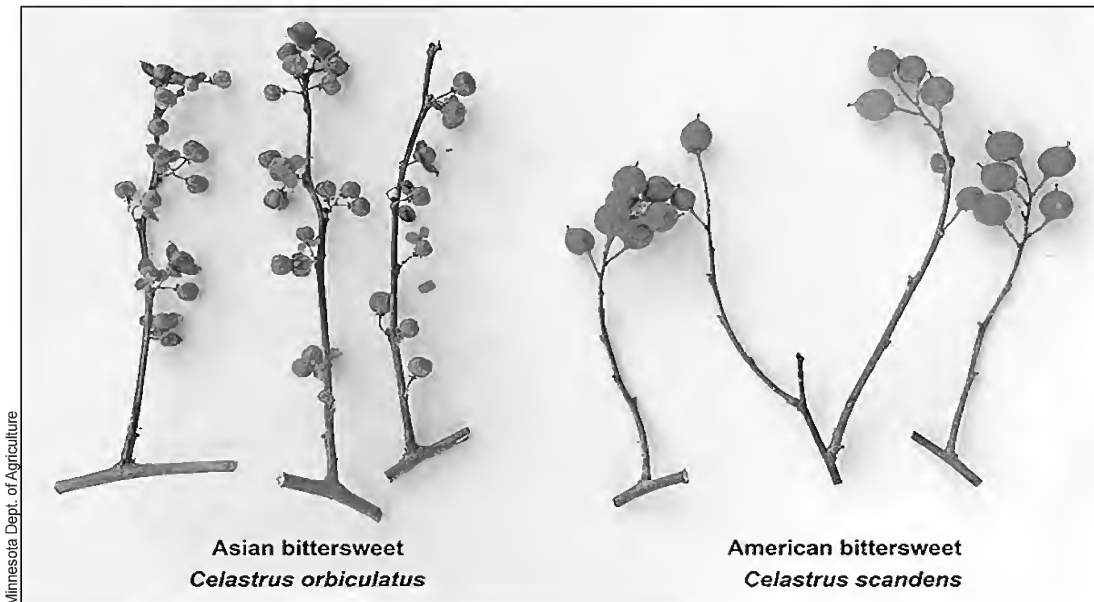
*Phys.org*, a web site of University of Illinois, says exotic oriental bittersweet (*Celastrus orbiculatus*) is being sold in the Midwest, mislabeled as American bittersweet (*C. scandens*) ("Many Midwestern retailers sell mislabeled invasive vines", Jan. 8, 2018).

numerous organizations. Marsha does the work of 15 people carrying backpack sprayers.

## **"Plant blindness"**

In an Aug. 14, 2018, article in the *Wall Street Journal* ("Rhododendron? Hydrangea? America Doesn't Know Anymore"), Douglas Belkin writes, "The US is running short of people who can tell the forest from the trees. Organizations such

as the National Park Service and Bureau of Land Management can't find enough scientists to deal with invasive plants, wildfire reforestation and basic land-management issues." Botanists call it "plant blindness." Botanical gardens and colleges, alarmed at the inability of Americans to tell one plant from another, hope more plant ID courses will improve the skills of "a generation of botanists more focused on their microscopes than studying leaf patterns."



Asian bittersweet  
*Celastrus orbiculatus*

American bittersweet  
*Celastrus scandens*

University of Illinois reports that many retailers are selling mislabeled invasive vines such as oriental bittersweet, which can smother mature trees.

Note how native bittersweet carries its fruit in terminal clusters rather than all along the stem.

Botanist David Zaya's team tested 34 plants from 11 vendors in Indiana, Illinois, Missouri and Nebraska; more than half of those labeled as American bittersweet were, in fact, the invasive species that can smother even mature trees. Seven of the 11 vendors got it wrong. Zaya warns, "If it has a picture with yellow berries, don't buy it."

## **Marsha who?**

*The Chicago Tribune* reported Sept. 6, 2018, that "Indiana Dunes National Lakeshore has a new tool for removing non-native species from its wetlands: Marsha." That's what botanist Dan Mason calls the Marsh Master, an amphibious vehicle with a 100-gallon sprayer to kill phragmites, hybrid cattails and other invasives. IDNL rented it the last four years but was finally able to buy it for over \$160,000 with donations from

Bills have been introduced in the US Senate and House to improve botany education.

## **Urban "heat islands"**

### **– trouble for bees**

An article in the fall, 2018, issue of *Wings* ("Mitigating the Effects of Heat on Urban Pollinators"), published by the Xerces Society for Invertebrate Conservation, explains that climate change is not just a problem for big animals like humans and polar bears. "Increasing temperatures can affect bee performance by changing phenology (the timing of biological events such as the rate of development or the date of emergence), and reducing survival rates, body mass, fat storage, and reproduction – and can ultimately result in fewer bees." Researchers at North Carolina

State University showed that the bee population in Raleigh declined an alarming 41% for every 1°C of temperature increase. Plants also respond to climate by reducing the number of flowers and quantities of pollen and nectar, which amplifies the problem for bees. The solution: planting pollinator gardens or patches in private and public urban spaces, “depaving” hard surfaces, and creating eco-roofs, bioswales and other “green infrastructure.”

### ***Are monarchs on the rise?***

In his Oct. 21, 2018, “Nature” column for the *Columbus Dispatch* (Ohio), Jim McCormac says those who grow milkweed are giving a real boost to these lepidopterans who were thought to be on their way to extinction only five years ago. Last winter, he reports, about six acres of Mexican oyamel fir forest were covered in wintering monarchs, twice the 2013 number. Chip Taylor of Monarch Watch estimates the butterflies could occupy up to 12 acres this winter. However, in 1998 they covered 45 acres, so don’t stop planting milkweed!

### ***Managing forests to save warblers***

The fall, 2018, issue of *The Woodland Steward* focused on ways that forest management is helping save a disappearing bird species. In “Conserving the Rare Cerulean Warbler in Indiana Forests,” Kamal Islam, professor of wildlife biology at Ball State University, describes the multi-agency Hardwood Ecosystem Experiment, a 100-year study that began in 2006 to “examine the effects of timber harvest and prescribed burns on plant and animal populations.” Islam says the population of the cerulean warbler (*Setophaga cerulea*), listed as endangered in Indiana and Canada, has declined 70% since 1966, in part from loss of habitat and the practice of fire suppression. The species, which nests primarily in oaks and hickories, needs openings in the forest canopy to establish and defend its territories.

### ***Chickadees in peril***

A three-year study of Carolina chickadees (*Poecile carolinensis*) in urban habitats has found that this species, and likely other insectivorous birds, needs at least 70% native plants in order to thrive and reproduce. An Oct. 31, 2018, article at *Smithsonian.com* (“Ecologists Have This Simple Request to Homeowners – Plant Native”) reports on a study published in *Proceedings of the National Academy of Sciences* in which researchers and 150 homeowners cooperated to monitor the interaction among plants, insects and birds. Scientists tracked 800 adult chickadees using radio telemetry transmitters. As the proportion of non-native biomass increased, the birds were forced to adjust their diet and as a result did not reproduce successfully enough to maintain a stable population. One pair of breeding chickadees needs a territory of 50 meters (approximately 55 yards) in radius. 🌿



Dick Daniels – Wikimedia

*Ecologists are asking homeowners to plant natives to support species such as the Carolina chickadee, which needs a territory of 50 meters and at least 70% native plants to reproduce successfully.*

***Save the date:***

## **INPS plant sale**

The annual INPS native plant sale and auction will be May 11 at Park Tudor High School in Indianapolis. Our VP Ellen Jacquart will be the morning speaker. Watch for details on the INPS web site and in the spring issue of *INPS Journal*.



# Urban renewal:

## By Winnie Mikeska

When we moved to our home in Corydon in Harrison County 25 years ago, our almost one-acre yard needed a lot of work. We had about 20 large trees and many large stumps. There were a few good perennials the previous owners had planted, such as coreopsis (*Coreopsis lanceolata*), monarda (*Monarda didyma*), sensitive fern (*Onoclea sensibilis*) and columbine



Above, spiderwort, wild geraniums and common blue violets are good companions in the Mikeska landscape. At right, (top) an Eastern tiger swallowtail nectars on purple coneflower and (bottom) a monarch feeds on liatris blooms.

(*Aquilegia* spp.). There were also a few not so good ones like winter creeper (*Euonymus fortunei*) and periwinkle (*Vinca minor*), which I liked – before I joined INPS three years ago. When I attended the 2015 conference and heard Doug Tallamy and Rick Darke speak, I was hooked on native plants. Now I am dedicated to learning which plants are native, which aren't, and which non-natives are harmfully invasive.

Before I joined, I encouraged the winter creeper and periwinkle. Periwinkle gave me joy as the first thing to bloom in the spring. I was an avid fan of "Victory Garden" on TV and remember winter creeper being praised often. I planted English ivy (*Hedera helix*) and liriopie (*Liriope spicata*). I transplanted periwinkle around the Cleveland pear tree (*Pyrus calleryana*) we planted in the front yard. In subsequent years, we planted two Bradford pear trees (also *P. calleryana*) that we got from the Arbor

Day Foundation. I'm ashamed to admit that we encouraged a burning bush (*Euonymus alatus*) that came with the property and even planted two more.

I can hear you saying, "Oh, no! Oh, no!" But those pear trees will have been eliminated by the time you read this. The periwinkle, ivy and liriopie are almost totally eradicated. The burning bushes are absolutely gone.

I planted liriopie around a sugar maple tree (*Acer saccharum*) and battled the volunteer violets (*Viola sororia*) so the liriopie could take hold. After a few years, the liriopie was thick and lush, but grass started to grow in the bed, and it was very hard to keep neat. Liriopie may not be considered invasive in Indiana yet, but it is in parts of the southeastern US. Now I prefer violets over liriopie because violets support so much more life. I am battling the liriopie and encouraging the violets, and the violets are winning! Grass doesn't have a chance to infiltrate a good stand of violets, which is becoming a beautiful ground cover that will soon be maintenance-free.

I love violets, but I just never had any respect for them. As a kid growing up in Pennsylvania, I picked flowers for my Mom: dandelions, clover and violets. Violets were so common I didn't appreciate them. Now I know they support many different butterflies. I noticed that tall plants like spiderwort (*Tradescantia virginiana*) that tend to fall over are well-supported by the violets growing among them.

Now let's talk about insects. Who would have thought that I would someday welcome insects to my yard? I had always wished for an insect-free environment. Isn't this what the commercial landscape vendors encourage? At that conference in 2015, Doug Tallamy's presentation enlightened me. I never before imagined that I would be joyful seeing insect damage on the leaves of my prized plants, but I am now. I remember Dr. Tallamy saying that insect damage won't kill a plant and you probably won't even notice it unless you're looking for it.

I remember several years ago picking off and killing a caterpillar on a parsley plant. Now I regret that I probably killed a black swallowtail butterfly. My whole mindset has changed. Now I appreciate the insects that I used to detest. Why

# my passion for natives

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did God make butterflies so beautiful? In my opinion, it's so that we can come to appreciate all insects.

I remember Rick Darke saying it is okay to mix some exotics with natives, as long as the exotics are not invasive. I was happy to hear that. Yes, I still like my lilacs (*Syringa* spp.), hydrangeas (*Hydrangea macrophylla*) and irises (*Iris* spp.). They bring beauty with their blossoms and have a place in my yard, but there will be no new plantings of exotic perennials from now on. If a flower doesn't attract a bee or a hummingbird, if a leaf stays whole and no creature is fed by it, they are just pretty faces. They have their place, but now it's a small place among the native plants that support the web of life.

Before I joined INPS, every spring I bought flats of annuals and an occasional perennial that I always thought was too expensive. Now my money is spent at our native plant sale in Indianapolis, where I can be sure everything I buy is native. I travel more than two hours to attend the plant sale in the spring. I refuse to buy plants from local nurseries unless I can be absolutely sure that they are not invasive plants. I don't know of any place close by where I can find a good selection of native plants.

I found wild ginger (*Asarum canadense*) at the INPS plant sale, and it has been a great replacement for the periwinkle that I weeded out. At the sale, I also purchased red chokeberry bushes (*Aronia arbutifolia*). In fall, the chokeberries' leaves are just as vividly red as those of burning bushes.

There is one edge of our yard that I call "the thicket," where I have convinced my husband to stop mowing to give wild plants a chance to grow and where I weed out known bad plants and let unknowns grow to see what they might be. This is where I discovered white snake root (*Ageratina altissima*) and wild petunia (*Ruellia humilis*). This area has three large arrowwood viburnum bushes (*Viburnum dentatum*), which we planted years ago (and later were delighted to find out are native), several small volunteer maples and lots of "weeds."

A few years ago this area was totally covered with garlic mustard (*Alliaria petiolata*) and winter creeper. As soon as I learned that

garlic mustard is invasive I began weeding it out. This year I weeded out just a few garlic mustard plants. I will keep weeding them each spring and hope someday they will be completely gone. The winter creeper is gone; in its place is Virginia creeper (*Parthenocissus quinquefolia*), a most desirable plant whose beautiful red leaves are spectacular in the fall.



Winnie Mikeska

Transforming our yard to a mostly native environment has become my latest passion. My first passion from childhood was bird-watching. I came late in life to a passion for native plants. I realize now that these two go hand in hand as part of the web of life. Hoping to attract a greater variety of birds and butterflies, we have planted red twig dogwoods (*Cornus sericea*) and spicebushes (*Lindera benzoin*), all purchased at the INPS plant sale. Every spring, it's a new adventure to go to the plant sale to see what interesting plants have been donated to be sold.

There used to be a commercial that said, "Nature's messy, clean it up." Well, I say, "Nature's beautiful, let it be."

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Winnie Mikeska is a member of INPS South Central Chapter.

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# @indiananativeplants.org



## Mission

To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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## *Letha's Outdoor Fund*

# Grants help kids experience nature

During the 2017-18 school year, 17 grants from INPAWS' Letha's Fund took 1,926 students into the great outdoors. Supported activities included hikes, creating educational green spaces, bird banding, garlic mustard pulling, a nocturnal animals program and more.

A total of \$6,518 was disbursed, averaging \$3.38 per student, although approved requests exceeded \$17,000. Chairperson Angela Sturdevant reports that due to budget constraints, the committee was unable to fully fund the amounts requested.

Grants went to entities from St. Joseph County in the north to Monroe County in the south. Five of the 17 awards (29%) went to organizations in Marion County and Indianapolis. 

| <i>Applicant</i>                           | <i>County</i> | <i>Trip location</i>   | <i>Approved</i> |
|--|---------------|--|-----------------|
| Center Grove MS North                      | Morgan        | Educational Greenspace project at school                                   | \$ 500          |
| Penn High School                           | St. Joseph    | Indiana Dunes West Beach Succession Trail                                  | \$ 836          |
| Chandler Elementary                        | Elkhart       | Amigo Centre, Sturgis, MI  | \$ 618          |
| MSD Decatur Township<br>(Blue Academy)     | Marion        | Earth Discovery Center (nocturnal animals)                                 | \$ 600          |
| Bloomington HS North                       | Monroe        | 6 stream locations in northern Monroe                                      | \$ 650          |
| New Augusta Public<br>Academy South        | Marion        | Holliday Park & Nature Center  | \$ 228          |
| Greenwood Schools<br>(Westwood Elementary) | Johnson       | Camp Tecumseh, Brookston, IN   | \$ 500          |
| Goshen High School                         | Elkhart       | Merry Lea Environmental Learning Center                                    | \$ 189          |
| Sycamore Land Trust                        | Monroe +      | SLT Environmental Education's<br>Native Plant Project. trips to 9+ schools | \$ 855          |
| Fremont Middle School                      | Steuben       | Brennan Woods Nature Preserve  | \$ 430          |
| Children of the Earth                      | Lake          | Indiana Dunes State Park Nature Center                                     | \$ 538          |
| Fairfield Elementary                       | Allen         | Little River Wetlands Project (Eagle Marsh)                                | \$ 53           |
| IPS 84 Center for Inquiry                  | Marion        | Mary Gray Bird Sanctuary, Connersville                                     | \$ 600          |
| Indianapolis Math & Sci.<br>Academy North  | Marion        | Marian University Ecolab   | \$ 289          |
| KinderCare Learning<br>Center Intech Blvd  | Marion        | Eagle Creek Park Earth Discovery Center                                    | \$ 190          |
| Eastern Elem. PTO                          | Howard        | Camp Tecumseh, Brookston, IN   | \$ 500          |
| Cope Environmental Ctr.                    | Wayne +       | Cope Environmental Center  | \$ 350          |

# Chapters have a busy

## INPS at work



### Central

Central Chapter members had a busy September. Sue Arnold hosted a “pop-up” garden tour at her home in Brownsburg on Sept. 1. Also in September, Tom Hohman presented a program on “Why Indiana Native Plants?” at the Irvington Branch Library and again at Lilly Nature Center at Celery Bog Nature Area in West Lafayette.

Members participated in “Nature Daze” Sept. 8 at Camp Rancho Framasa in Nashville, IN. The monthly meeting Sept. 9 featured a presentation on bees and pollination by Doug Rohde and Deb Rood at Union Chapel United Methodist Church.

Central member Brooke Alford teamed up with Alicia Douglass from East Central to work the INPS exhibit table at the INASLA (Indiana Chapter of the American Society of Landscape Architects) annual meeting Sept. 14 at the NCAA Hall of Champions in Indianapolis. Brooke is Central Chapter’s newest board member.



Karen Griggs

*Tippecanoe County Master Gardeners held an open house in July showcasing native plants purchased with a grant from INPS.*

Chapter members Crystal Renskers, Judith Lieberman, and Ben R. Hess helped with the Carmel Clay Parks and Recreation Bio Blitz at West Park on Sept. 15 after the parks department asked the chapter to provide expertise. The department has been working with University High School students to collect first-time baseline data at the park.

Ruth Ann Ingraham gave a talk entitled “Life on a Diet of Decay” on the fruiting conditions

for fungi at the chapter’s Oct. 8 meeting at the Nora Library.

The chapter’s SWAT team removed invasives at Fort Benjamin Harrison State Park Sept. 22, Holliday Park Oct. 3, Potter’s Bridge Park Oct. 11 and Thornwood Preserve Nov. 4.

### North

A special program and hike in October were part of a full season of botanizing opportunities for North Chapter members. Casey Jones (ACRES Land Trust) and Scott Namestnik (INPS) introduced members to a newly acquired fen in LaGrange County. Casey gave a historical account of the property, which began as a marl pit that was harvested for over 40 years. In the 1980s plant inventories were taken of the area surrounding the lake. ACRES obtained the property on Dec. 11, 2017, the bicentennial of the Nature Trust and Conservation Fund. Scott discussed some of the previous plant inventories and brought the group up to date on the inventory of the property that he more recently produced.

After the presentation, members car-pooled to the fen. Scott led a hike around the fen and pointed out plants on the list that were still blooming. ACRES will manage the property, but it remains closed to the public.

On Dec. 2 two members hosted the chapter’s annual potluck and membership meeting.

### Northeast

Northeast Chapter’s annual meeting took place in October at the Forks of the Wabash in Huntington. Forty members and guests were treated to a presentation on “Stopping Invasive Plants in Indiana” by INPS vice president Ellen Jacquart. She discussed the status of the DNR rule banning sale of invasives in the state and the Great Lakes Early Detection Network (GLEDN) cell phone app for reporting invasives. The meeting concluded with the biennial election of officers.

### South Central

SCINPS member Ellen Jacquart led 20 South Central members on a challenging Sept. 1 hike at Cedar Bluff Nature Preserve in Monroe County.

A “Take Control: Invasive and Native Plant Workshop,” a collaboration between MC-IRIS and the City of Bloomington, was conducted

# autumn

1925-2018

## Christine Brewster, PhD

Sept. 8 at RCA Community Park, where Jacquart spoke on invasives identification.

The SCINPS annual meeting was Oct. 27 at Monroe County Public Library, where members heard about plans for 2019 from president Steve Dunbar and the chapter's new chairs of outreach, programs, and hikes. Ellen spoke about the state's Terrestrial Plant Rule that will ban many highly invasive plants.

A prairie garden tour was held Aug. 25 at the home of Howard Webb in Bloomington. The chapter had a booth at SNAYL (Sustaining Nature And Your Land) Day June 16 in Bloomington. Several members have given talks and led hikes for various organizations.

### West Central

West Central's fall programs included Tom Hohman speaking about the Indiana Parks Alliance and chapter member Susan Ullrich leading the group in an evening of prairie plant identification. Members heard from Gus Nyberg on "Prairies from Scratch" and Landon Vine on "The Charm of Wetland Plants."

The chapter's monthly meetings are held at Lilly Nature Center in Celery Bog Park, West Lafayette, at 7 p.m. on fourth Mondays.

WCINPS and Sycamore Audubon Society, in cooperation with Tippecanoe County Parks, have been working together to form the RIP Squad (Remove Invasive Plants), a band of dedicated rippers who go to designated areas to remove invaders. In late October the RIP Squad worked to remove invasives during "Pulling for Bats" in honor of Bat Week ([www.batweek.org](http://www.batweek.org)). RIP Squad workdays were held at Prophet's Rock near Battleground Oct. 27 and Ross Hills Park Oct. 28.

The chapter has been working with SICIM's (Southern Indiana Cooperative Invasives Management) west central regional specialist Amber Slaughterbeck to develop a CISMA (Cooperative Invasive Species Management Area), a partnership to eradicate invasive species on the local level using local people and resources. The new designation is R-R-RIPIT: Recognize, Report and Remove Invasive Plants In Tippecanoe. Volunteers are needed. If interested, contact Patty Jones, WCINPS invasives chairperson, at [removeinvasiveplants.wcinps@gmail.com](mailto:removeinvasiveplants.wcinps@gmail.com) or 765-463-3050. 🍂

### By Ruth Ann Ingraham

Longtime INPS member Christine Brewster died Oct. 4, 2018, in West Lafayette. She was born Aug. 23, 1925, in New Jersey.

Christine moved to West Lafayette from the east coast in 1953 to be a postdoctoral fellow in the chemistry department at Purdue University. A year later, she wed faculty member James Brewster; they later had three daughters.

An avid rock collector, Chris earned a master's degree in geology in her fifties and taught geology to public school children until 1991. As if those two fields of science were not enough, she turned her attention to the plant world and became a Master Gardener in 1994.

This was all before I met Chris. Then in the spring of 1999, Carolyn Harstad, Hilary Cox and I, representing (then) INPAWS, drove up to Lafayette where we met with a gathering of people interested in establishing a chapter in the west central area. Chris was the chapter's first chair, a position she held through 2007.

Chris was in her seventies when she became dedicated to the establishment of a prairie at Prophetstown State Park, not far from Lafayette. With a corps of volunteers, she spearheaded planting and seed collection there. Under grow-lights in her basement, Chris raised seedlings and transplanted them in the prairie. In addition, Tippecanoe County parks profited from the time she spent pulling garlic mustard and tackling bush honeysuckle.

Chris's 93 years were packed with pleasures of the great outdoors. She loved to hike, bike and raft. She cared deeply about her hometown, to which she lent her talents and energy, serving on the local school board and working to bring about special education legislation in Indiana.

The Brewster family wishes that memorial contributions be made to Indiana Native Plant Society, P.O. Box 501528, Indianapolis, IN, 46250; NICHES Land Trust, 1782 N 400E, Lafayette, IN, 47905; or the Wabash Center, 2000 Greenbush St., Lafayette, IN, 47904. 🍂

### Harstad Memorial

Memorial contributions in honor of the late Carolyn Harstad, a co-founder of INPAWS (INPS) who died on July 24, 2018, may be made to the Peter and Carolyn Harstad Scholarship Fund and mailed c/o Bethany Lutheran College, 700 Luther Dr., Mankato, MN 56001. 🍂



Chris Brewster in her back yard in 1994

Brewster family



## Indiana Native Plant Society

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# Birth of a book: Wake up, Woods

**By Ruth Ann Ingraham**

A children's book initiated by INPS at a spring retreat in 2016 will soon make its debut: *Wake Up, Woods*. The concept stemmed from a discussion three years ago about ways to connect young people to nature. What about a book, or a series of books, for young people about native plants?

Melissa Moran and I volunteered to investigate whether there was interest in a book that would feature plants with intriguing

common names such as "green dragon" and "bloodroot." We interviewed elementary school teachers, librarians and a book store owner and concluded that such a book would be both desirable and unique. That feedback spurred us on. With enthusiastic support from INPS, Melissa and I began the lengthy process.

We built an editorial team of creative and knowledgeable people to bring the book to fruition: Gillian Harris, botanical artist; Shane Gibson, verse writer; Mike Homoya, factual information source; Pat Prather, book designer. We added a savvy young mom, Carolyn Wamsley, to our editorial group.

The result is *Wake Up, Woods*, a richly-colored children's book to be launched this year, intended for students in the primary grades. Whimsy adds to the beauty and science of a selection of native plants that spring to life when winter wanes and the sun streams through the bare trees to warm the earth. Various life forms cooperate to assure that these plants reproduce and thrive. We pay special attention to pollinators and seed dispersers.

Plants featured in 12 two-page spreads are violets, trilliums, Christmas fern, green dragon, jack-in-the-pulpit, bloodroot, mayapple, columbine, fire pink, Dutchman's breeches, squirrel corn, wood poppy, bluebells, toothwort, spring beauty and trout lily.

We are grateful to the organizations that have financially supported publication of *Wake Up, Woods*: INPS, The Nature Conservancy, Indiana Academy of Science, Sycamore Land Trust and NICHES Land Trust. Dozens of individuals have donated as well.

Is this the first in a series? Time will tell.

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*Ruth Ann Ingraham headed up the creative team that developed Wake Up, Woods.*

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Gillian Harris

